Service Manual

TAPE RECORDER

National Technics

HI-FI STEREO CASSETTE DECK WITH FRONT CONTROLS AND DOLBY* NOISE REDUCTION SYSTEM

RS-676US MECHANISM SERIES

MODEL RS-676US

SPECIFICATIONS

Power Source:	AC: 90~109, 110~125, 200~219, 220~250 volts, 50/60 Hz
Power Consumption:	25 W
Motors:	2-motor system 1-Electronic speed control motor for capstan drive 1-DC motor for reel table drive
Transistors:	2SC1327(6), 2SC644(2), 2SC828(28), 2SC1318(3), 2SA719(1), 2SC1096Z(3), 2SC1384(3), 2SD288(1), 2SA666H(3), 2SC945(2), 2SC1407(2), 2SK30(2)
Head:	HPF head for rec/playback head
Diode & Rectifiers:	1S1211(8), OA90Z(20), OA91(3), MA162(10), RD7A(2), FR202(6), M21C(2), EQA0119(1), 10DC1(3), 10DC1R(2)
Track System:	4-track 2-channel stereo recording and playback
Recording System:	AC bias (90 kHz), AC erase
Tape Speed:	4.8 cm/s, (1-7/8 ips.)
Program Time:	1 hour stereo recording with C-60 cassette tape
Wow and Flutter:	0.063% (WRMS), ±0.15% (DIN)
Frequency Response:	Normal tape; 20~16,000 Hz 25~14,000 Hz (DIN) 30~13,000 Hz (±3 dB) CrO_2 tape: 20~18,000 Hz 25~15,000 Hz (DIN) 30~14,000 Hz (±3 dB)
Signal to Noise Ratio:	Dolby NR out; 52 dB (0 VU=250 PWb/mm) Dolby NR in; 62 dB at 10 kHz
Harmonic Distortion:	2.0% (0 VU at 1,000 Hz)
Inputs:	MIC: sensitivity 0.3 mV/applicable microphone impedance 600Ω~20 KΩ LINE: sensitivity 60 mV/110 KΩ TUNER: sensitivity 100 mV/190 KΩ
Outputs:	LINE: output level 420 mV (max.) impedance 50 KΩ over HEADPHONE: output level 45 mV/8Ω
Rec/PB Connection:	5 P DIN type
Fast Forward and Rewind Time:	Approx. 80 second with C-60 cassette tape
Dimensions:	410mm(W)×140mm(H)×360mm(D) 16-3/8″(W)×5-1/2″(H)×14-3/8″(D)
Weight:	10.5 Kg, (23-1/8 ips.)

These specifications are subject to change in order to accommodate improvements in design.

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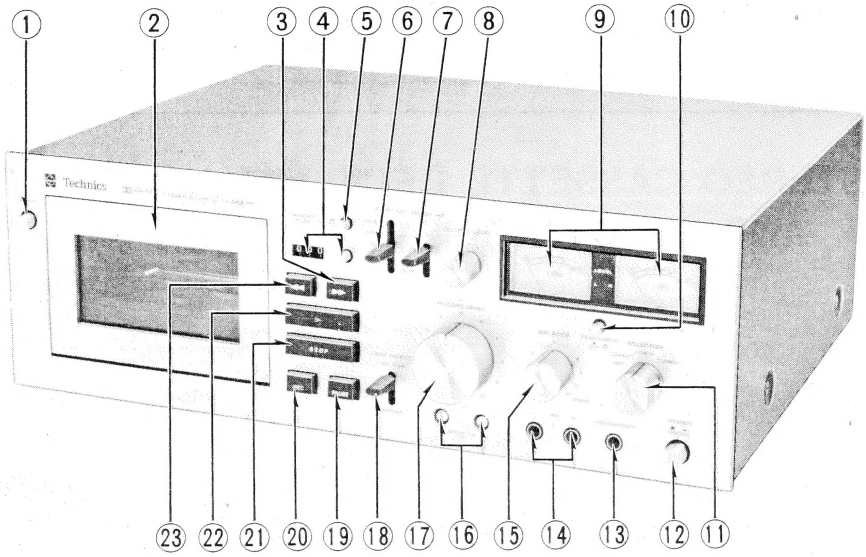
LOCATION OF PARTS



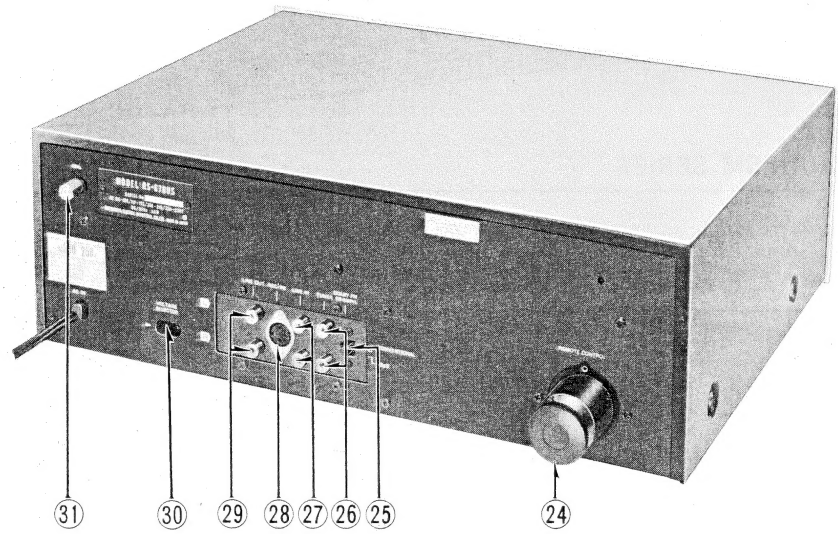


Fig. 1

① Ejection button
② Cassette cover
③ Fast forward button
④ Tape counter and reset button
⑤ Memory playback button
⑥ Dolby NR/MPX Filter
⑦ Dolby FM switch
⑧ Output level control
⑨ VU meters
⑩ Peak-signal check button
⑪ Input source selector
⑫ Power switch
⑬ Headphones jack
⑭ Microphone jacks
⑮ Recording balance control
⑯ Dolby FM calibration controls
⑰ Recording level control
⑱ Tape selector
⑲ Pause button
⑳ Record button
㉑ Stop button
㉒ Playback button
㉓ Rewind button
㉔ Remote control jack
㉕ Dolby FM de-emphasis switch
㉖ Tuner input jacks
㉗ Line input jacks
㉘ Record/playback connection socket
㉙ Line output jacks
㉚ Voltage select switch
㉛ Ground terminal

DISASSEMBLY INSTRUCTIONS

HOW TO REMOVE CASE COVER, BOTTOM PANEL AND FRONT PANEL

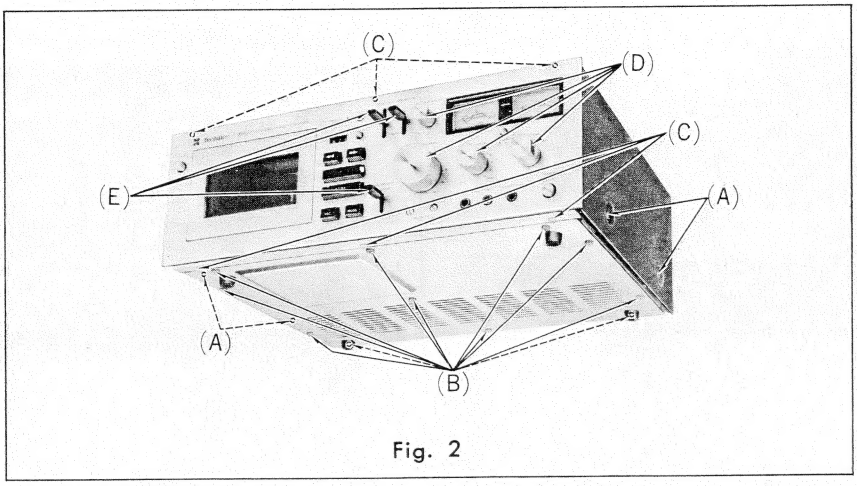


Fig. 2

Procedure	How to remove——	Remove——	Pcs.
1	Case cover	(A)	(4)
2	Bottom panel	(B)	(11)
3	Front panel	(C), (D), (E)	(6), (4), (3)

HOW TO REMOVE FRONT ANGLE AND CASSETTE COVER

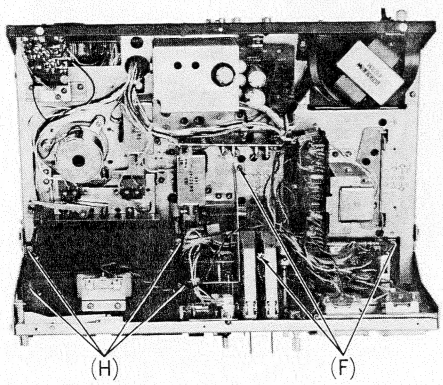


Fig. 3

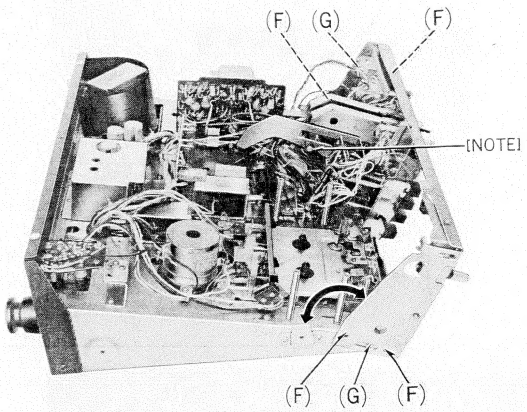


Fig. 4

Procedure	How to remove——	Remove——	Pcs.	Remarks
1	Front angle	(F)	(7)	In this condition, front angle can be tilted to 45°.
2	Front angle	(G)	(2)	In this condition, front angle can be removed from chassis.
3	Cassette cover	(H)	(4)	————

NOTE: Before tilting front angle (procedure 1), remove counter belt from connection pulley and hang it on the arrow position in fig. 4.

HOW TO REMOVE JACK BASE PLATE AND PRINTED CIRCUIT BOARD (AMP & CONTROL)

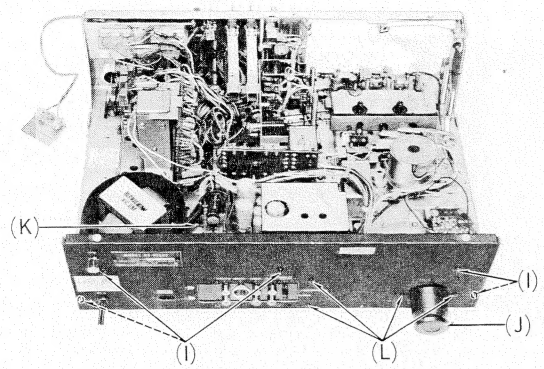


Fig. 5

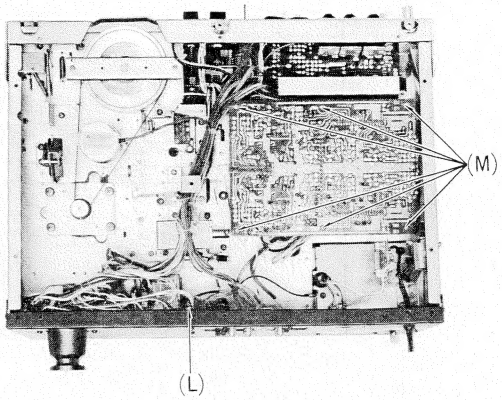


Fig. 6

Procedure	How to remove——	Remove——	Pcs.
1	Jack base plate	(I), (J), (K)	(5), (1), (1)
2	Printed circuit board (CONTROL)	(L)	(5)
3	Printed circuit board (AMP)	(M)	(6)

HOW TO REMOVE HEAD COVER

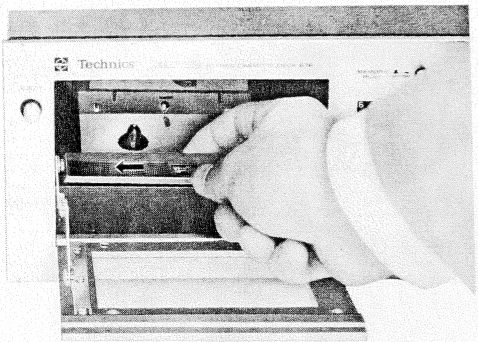


Fig. 7

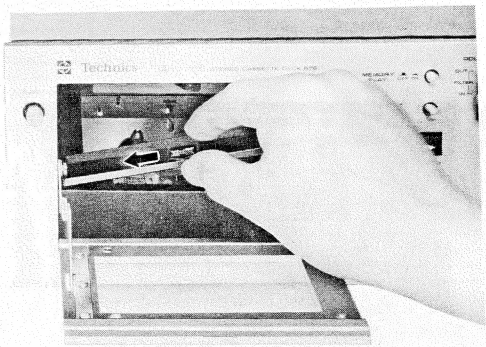


Fig. 8

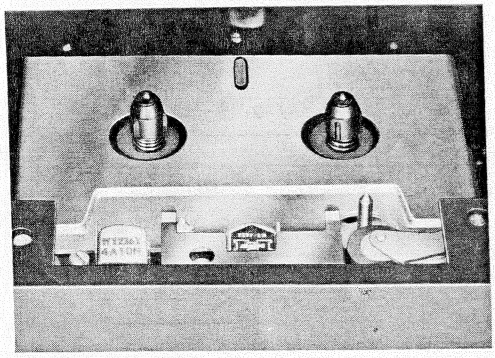


Fig. 9

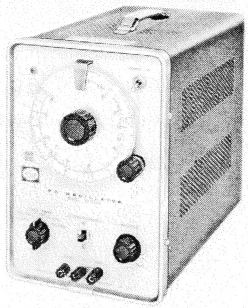
1. Pushing the head cover as shown in fig. 7, and lift it up as shown in fig. 8.
2. Then head cover can be removed.

ADJUSTMENTS

I. TEST INSTRUMENTS

1. Prepare test instruments which are equivalent in accuracy to those shown below.
2. The test instruments should be inspected and corrected by specialists once every 6 months, because a long period of use without maintenance may increase errors in indication.
3. "Warm up" the test instruments for 30 minutes and the set to be measured for 10 minutes before taking the measurements. If not, there may arise an error or difference between the initial value and the stablized value measured after "Warming up".
4. Specifications of Test Instruments.

(1) **Audio Frequency Oscillator**



a. Oscillation Frequency
   5 Hz~500 kHz (5 ranges)
b. Frequency Tolerance
   ±(3% +1 Hz)
c. Sine Wave
   * Output Voltage 5 Vrms±10% (open)
     (at 25°C) 2.5 Vrms±10% (600Ω load)
   * Output Frequency Response Within ±0.2 dB 20 Hz~20 kHz
     Within ±0.5 dB 5 Hz~500 kHz
   * Distortion Factor Not more than 0.05% 200 Hz~20 kHz
     Not more than 0.5% 5 Hz, 500 kHz
   * Output Impedance 600Ω Unbalanced Within ±15%
   * Output Attenuator 0, 20 dB Error: Within ±0.2 dB
d. Temperature in Use of Set
   Temperature=0~40°C: Humidity=90% or less

(2) **Automatic-spot Distortion Meter (with Vacuum Tube Voltmeter)**

A. Distortion Factor Measurement

a. Frequency (Fundamental wave)	400 Hz　1 kHz±10%
b. Measurement	0.1～100% (6 range)
c. Input	50 mV～50 V
d. Fundamental Wave Attenuation	−60 dB or more

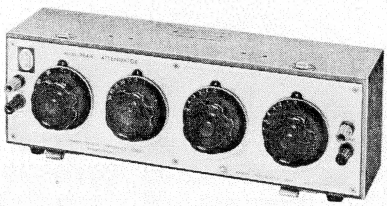
B. Level Measurement

a. Measurement	1 mV (−60 dB)～30 V (30 dB) 9 range
b. Frequency Response (1 kHz basis)	20 Hz～100 kHz±0.3 dB
c. Input Impedance	1 MΩ±10%　Less than 50 pF
d. Error in Indicated Value	With in ±3% at 1 kHz

C. Output Terminal

a. Frequency Response	10 Hz～100 kHz±1 dB 100 kHz～1 MHz±3 dB
b. Output Voltage	1 Vrms±10 % (1 kHz Sine Wave)

(3) Attenuator



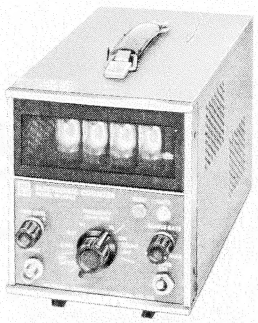
a. Input Impedance	600Ω　Unbalanced
b. Maximum Attenuation	121 dB
c. Minimum Attenuation	0.1 dB

(4) Oscilloscope

a. Cathode Ray Tube — Effective Range 8×8 cm
b. Vertical Axis
- Input Sensitivity: 30 mV～30 V/cm
- Frequency Band: DC～2 MHz
- Transient Time: 180 ns
- Input Impedance: 1 MΩ, 35 pF

c. Horizontal Axis
- Tuning Range: 30 Hz～2 MHz
- Sweep Time: 1μs～100 ms/cm
- External Sweep: 1 Vp-p/cm or more

(5) Digital Electronic Counter



a. Number of Figures: 4 (decimal system)
b. Input Sensitivity: 100 mV rms
c. Input Impedance: 1 MΩ, 40 pF
d. Frequency Measurement Range: 10 Hz～100 kHz
e. Counting Time: 0.1, 1, 10 s

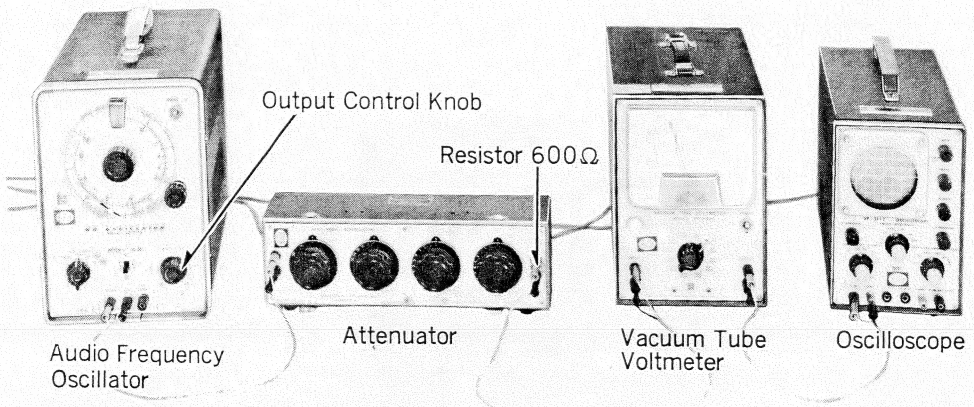
(6) Wow Meter

a. Measured Center Frequency Range: 3 kHz±4%
b. Input Level Range: 30 mV~3 V
c. Input Impedance: About 50 kΩ Unbalanced
d. Measurement: 0.01~3% (5 ranges)
e. Indicator Error: Maximum error in indicated value ±5% in each range.
f. Frequency Response: Conforming to Weighting Curve Characteristic (WRMS), JIS C5551.
Flat Characterstic (RMS)
0.5~200 Hz, Within −3 dB (4 Hz basis)
g. Meter Indication System: Effective Value Indication, conforming to JIS C5551
h. Meter Response Characteristic: About 5~7 sec.
i. Oscillation Frequency: 3 Frequencies (3 kHz, 3 kHz±3%)
j. Temperatur Range: 0~40°C

II. MEASUREMENT CONDITIONS

1. Standard Measurement Conditions
   * Ambient Temperature: 10°~30°C (50°~86°F)
   * Ambient Humidity: 30~90% RH
   * Power Voltage: Rated Voltage=120 V±5%
2. Position of Tape Recorder
   When measuring, place the unit under test in a horizontal position.
3. Oscillator Output Voltage Adjustment
   * Connect the equipments as shown in the following and adjust the oscillator output control knob for 1 V (f=1 kHz) through the attenuator while keeping the attenuator at 0 dB.
   * When supplying a signal to the tape recorder amplifier, adjust the input level using the attenuator.

   Connection of Test Equipments.



f=1 kHz **Output Voltage=1 V (0 dB)**

III. TEST TAPE

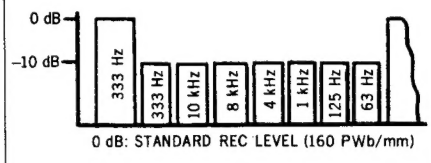
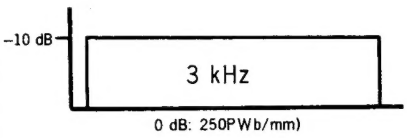
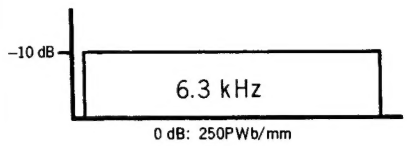
* Test Tape Life

The more Frequently the test tape is used, the more the tape characteristics will deteriorate (e.g. lowering of recorded level, worsening of frequency response particularly in high-frequency range, and an increase in wow due to tape elongation) until measured values become unreliable. Even in such a case where a tape is not used, but stored, for a long period of time, the tape shows deterioration in performance because of self demagnetization due to storage conditions, etc.

Please refer to the tape life specification and use care not to use a tape longer than its rated life when servicing.

Frequence of Use: Not more than 20 times for each tape length.
Storage Period: Not more than 6 months.

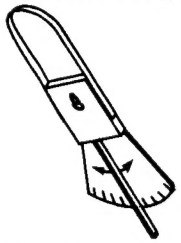
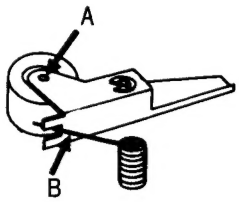
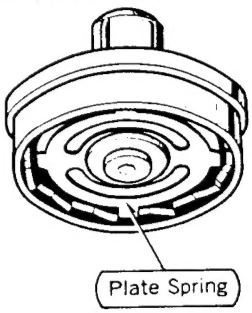
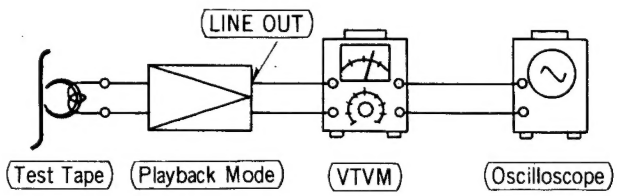
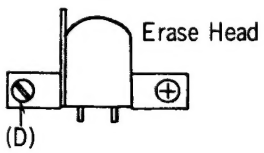
※ Test Tape

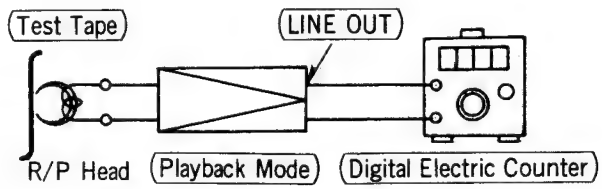
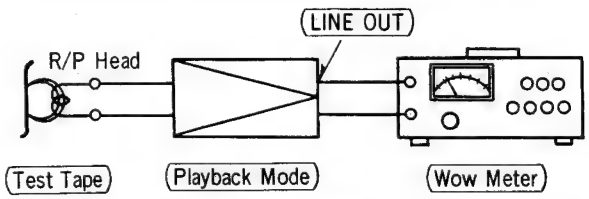
PARTS NO.	PARTS NAME	SPECIFICATIONS	REMARKS
C-FH	STANDARD REC. LEVEL & FREQ. RESPONSE TAPE		5 TIMES REPETITIVE RECORDING TAPE SPEED: 1-7/8 IPS (4.8 CM/S), FULL TRACK (10 MIN.)
C-WAT	WOW & TAPE SPEED TAPE		FULL TRACK (45 MIN.) TAPE SPEED: 1-7/8 IPS (4.8 CM/S).
C-AA	AZIMUTH TAPE		FULL TRACK (15 MIN.) TAPE SPEED: 1-7/8 IPS (4.8 CM/S).
C-RA	REFERENCE BLANK TAPE NORMAL		UNRECORDED TAPE (20 MIN.)
C-RF	REFERENCE BLANK TAPE CrO_2		UNRECORDED TAPE (20 MIN.)

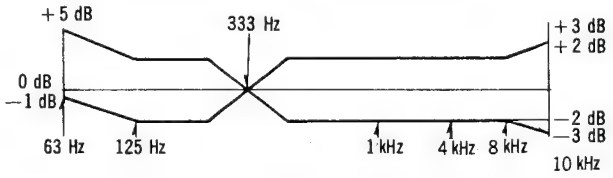
IV. MEASUREMENT & ADJUSTMENT METHOD

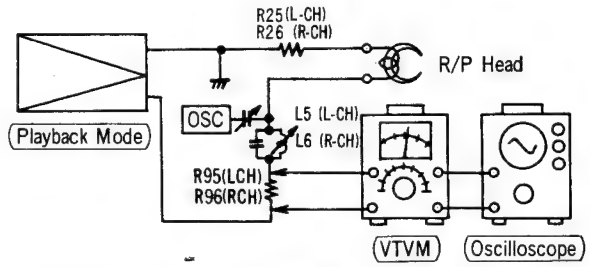
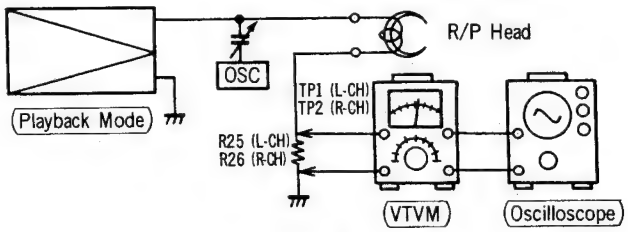
NOTE:

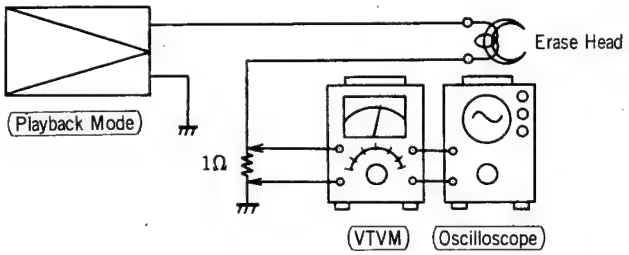
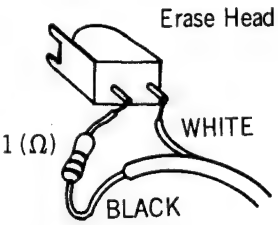
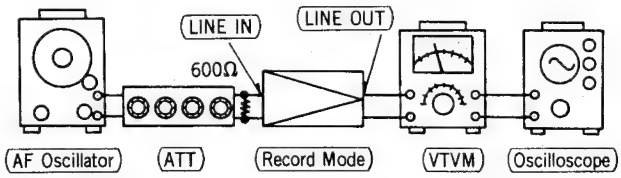
1. Make sure heads are clean.
2. Make sure capstan and pressure roller are clean.
3. Judgeable room temperature: 20±5°C (68±9°F)
4. Source Selector: LINE IN
5. Output Level Control: MAX.
6. Tape Select Switch: NORMAL
7. Dolby NR/MPX Filter Switch: OUT
8. Dolby FM Switch: OUT

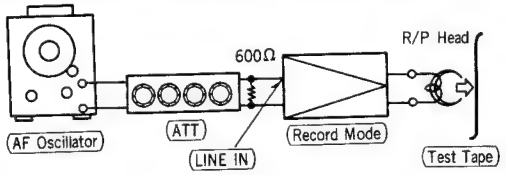
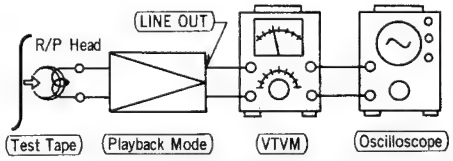
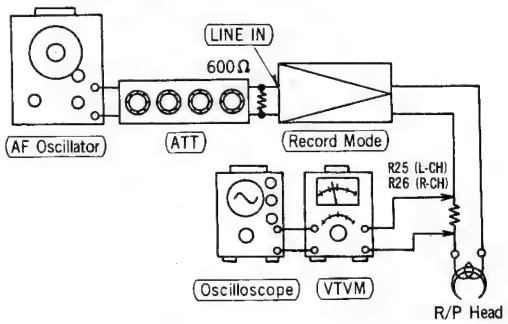
ITEM	MEASUREMENT & ADJUSTMENT	REMARKS
Pressure of Pressure Roller Equipment: * Cassette Type Tension Gauge (max. 500 gr) 	1. Place UNIT into playback mode. 2. Hook tension gauge to pressure roller shaft top (A), and pull gauge in direction opposite to pressure of pressure roller against capstan (See fig. 10). 3. Read pressure indicated on gauge immediately when pressure roller moves away from capstan and stops rotating. **Standard Value: 400±50 gr** **Adjustment method** Adjust by bending the (B) part of the pressure roller spring (See fig. 10).	* Playback Mode  **Fig. 10**
Takeup Tension Equipment: * Cassette Torque Meter (RP-8063N)	1. Mount cassette torque meter on UNIT. 2. Place UNIT into playback mode and read takeup torque. 3. Measure several times and determine the mean value. **Standard Value: 55±15 gr-cm** If the measured value is not within standard, firstly clean the rotational parts of the mechanism with alcohol, and if it still is not within standard, make the following adjustment. **Adjustment method** Adjust by turning the plate spring attached in the takeup reel table (See fig. 11).	* Playback Mode  **Fig. 11**
Head Azimuth Adjustment Equipments: * VTVM * Oscilloscope * Test Tape (Azimuth) ...C-AA * Tape Path Viewer ...RT-8133	**Record/playback head adjustment** 1. Test equipments connection is shown below.  **Fig. 12** 2. Play azimuth tape (C-AA 6.3 kHz). 3. Adjust record/playback head angle adjustment screw (C) in fig. 13 so that output level at LINE OUT becomes maximum. 4. Measure both channels, and the level difference between channels shoud be minimised by adjusting. 5. After adjustment lock head adjustment screw with lacquer. **Erase head adjustment** 1. Test equipments connection is the same above but use the tape path viewer (RT-8133) in stead of test tape (C-AA). 2. Play this tape. 3. Adjust screw (D) shown in fig. 14 so that the tape may not get curled or malformed by tape guide of the erase head. 4. After adjustment lock head adjust screw with lacquer.	* Playback Mode **Fig. 13**  **Fig. 14**

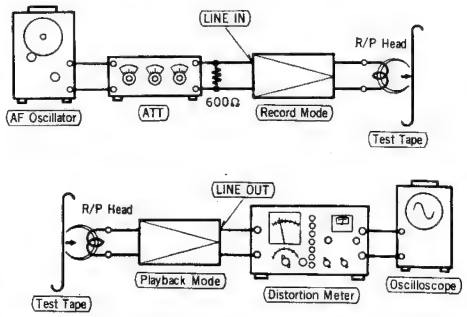
ITEM	MEASUREMENT & ADJUSTMENT	REMARKS
Tape Speed Equipment: * Digital Electronic Counter or Frequency Counter (RP-8067) * Test Tape...C-WAT	**Tape speed accuracy** 1. Test equipment connection is shown below.  **Fig. 15** 2. Play test tape (C-WAT 3,000 Hz), and supply playback signal to frequency counter. 3. Measure this frequency. 4. On the basis of 3,000 Hz, determine value by following formula: $\text{Tape speed accuracy} = \left\{\frac{f-3{,}000}{3{,}000} \times 100\right\}\%$ where, f = measured value 5. Take measurement at middle section of tape. **Standard Value: ±1.5%** **Adjustment method** 1. Play the test tape (middle). 2. Adjust the tape speed adjustment VR shown on page 19 so that frequency becomes 3,000 Hz. **Tape speed fluctuation** Make measurements in same manner as above (beginning, middle and end of tape), and determine difference between maximum and minimum values and calculate as follows: $\text{Tape speed fluctuation} = \left\{\frac{f_1-f_2}{3{,}000} \times 100\right\}\%$ f_1 = maximum value f_2 = minimum value **Standard Value: 0.5%**	* Playback Mode
Wow and Flutter Equipment: * Wow Meter * Test Tape...C-WAT	1. Test equipment connection is shown below.  **Fig. 16** 2. Use wow test tape (3,000 Hz) and measure its playback signal on wow meter. 3. Wow & Flutter is expressed in percentage and that measurement can be weighted by JIS Network. (WRMS) 4. Measure at middle section of test tape. **Standard Value: 0.063% (WRMS)**	* Playback Mode

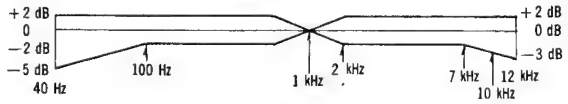
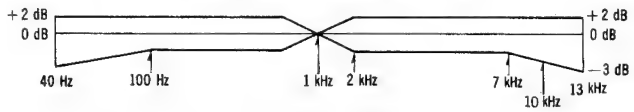
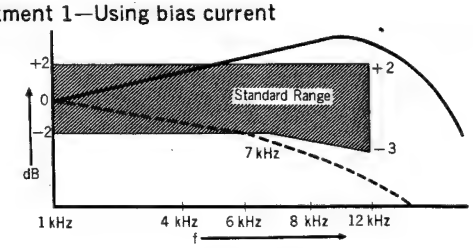
ITEM	MEASUREMENT & ADJUSTMENT	REMARKS
Playback Frequency Response Equipments: * VTVM * Oscilloscope * Test Tape...C-FH	1. Test equipments connection is as same as "Head Azimuth Adjustment" but use the test tape (C-FH) in stead of head azimuth tape (See fig. 12). 2. Place UNIT into playback mode. 3. Play frequency response test tape (C-FH). 4. Measure output level at 10 kHz, 8 kHz, 4 kHz, 1 kHz, 125 Hz and 63 Hz and compare output level with standard frequency 333 Hz, at LINE OUT. 5. Make measurement for both channels. 6. Make sure that the measured value is within the range specified in the frequency response chart. **Playback Frequency Response Chart**  **Fig. 17** 7. If measured value is not in standard, adjust VR1 (L-CH), VR2 (R-CH) (See fig. 30 on page 19).	* Playback Mode
Playback Gain Equipments: * VTVM * Oscilloscope * Test Tape...C-FH	1. Test equipments connection is shown in fig. 12. 2. Play standard recording level portion on test tape (C-FH 333 Hz) and, using VTVM, measure the output level at LINE OUT jack. 3. Make measurement for both channels. **Standard Value: 0.42 V (−7 dB)** **Adjustment** 1. If measured value is not standard, adjust VR3 (L-CH), VR4 (R-CH) (See fig. 30 on page 19). 2. After adjustment, check "Playback Frequency Response" again.	* Playback Mode
Playback S/N Ratio Equipments: * VTVM * Oscilloscope * Test Tape...C-FH * Empty Cassette	1. Test equipments connection is shown in fig. 12. 2. Play standard recording level test tape (C-FH 333 Hz) and read output level on VTVM. Refer to "Playback Gain Adjustment". 3. Place empty cassette (which has been cut) and play gain without moving adjusted playback VR. 4. Measure noise level at this time using VTVM, and determine ratio of this level to test tape output signal voltage (333 Hz). **Standard Value: Greater than 45 dB** An example calculation is shown below. A: Es=playback output signal voltage of test tape (333 Hz) B: En=playback output noise level Es=0.42 V (−7 dB) En=2.5 mV (−52 dB) $S/N\ ratio=\frac{Es}{En}=\frac{0.42\,V}{2.5\,mV}=178$ $20\ \log_{10}178=45\,dB$ S/N ratio=Es (dB) − En (dB) = −7 − (−52) = 45 dB	* Playback Mode

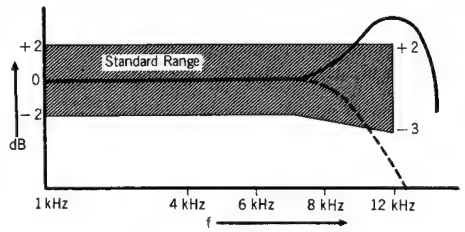
ITEM	MEASUREMENT & ADJUSTMENT	REMARKS
Bias Leak Equipments: * VTVM * Oscilloscope	1. Test equipments connection is shown below (See AMP circuit board on page 24).  **Fig. 18** 2. Place UNIT into record mode. 3. Adjust trap coils L5 (L-CH), L6 (R-CH), so that measured value become minimum (See adjustment parts location on page 19). 4. Make adjustment for both channels.	* Record Mode * Record Level Control ...MAX.
Bias Current Equipments: * VTVM * Oscilloscope	1. Test equipments connection is shown below.  **Fig. 19** 2. Place UNIT into record mode. 3. Read voltage on VTVM and calculate bias current by following formula. $$\text{Bias current (A)} = \frac{\text{Value read on VTVM (V)}}{10\ (\Omega)}$$ **Standard Value: 0.17±0.05 mA** 4. Adjust trimmer capacitors of VC301 (L-CH), and VC302 (R-CH) (See adjustment part location on page 19).	* Record Mode * Be sure the ground end of the meter is connected to the ground end of the resistor. * When bias current is adjusted on one channel only, note that bias current on the other channel may vary.

ITEM	MEASUREMENT & ADJUSTMENT	REMARKS
Erase Current Equipments: * VTVM * Oscilloscope * Resistor (1Ω)	1. Connect 1Ω resistor between ground side terminal of erase head ground lead wire remove (See fig. 21). 2. Connect VTVM to both ends of 1Ω resistor.  **Fig. 20** 3. Place UNIT into record mode and, measure voltage across the 1Ω resistor. 4. Determine erase current with the following formula. $\text{Erase current (A)} = \frac{\text{Voltage across both ends of 1 (Ω)}}{\text{1 (Ω)}}$ **Standard Value: 140±35 mA**	* Record Mode  **Fig. 21**
Balance (for recording level) Equipments: * VTVM * Oscilloscope * AF Oscillator * ATT	1. Test equipments connection is shown below.  **Fig. 22** 2. Place UNIT into record mode, and set the record level control VR to minimum. 3. Supply 1 kHz signal (−7 dB) from AF oscillator, through ATT, to LINE IN (L-CH). 4. Set the balance control VR to L-CH maximum. 5. Adjust record level control VR so that the output level at LINE OUT on VTVM becomes −7 dB. 6. At this time, connect test equipment to R-CH, and supply 1 KHz (−7 dB) to LINE IN (R-CH) (record VR should not be moved). 7. Set the balance volume to R-CH maximum. 8. Measure the output level at LINE OUT (R-CH). 9. Adjust VR20 so that measured value at LINE OUT (R-CH) becomes −7 dB (See adjustment parts location on page 19).	* Record Mode

ITEM	MEASUREMENT & ADJUSTMENT	REMARKS
Overall Gain Equipments: * AF Oscillator * VTVM * ATT * Oscilloscope * Test Tape (Reference Blank Tape)...C-RA	1. Test equipments connection is shown in fig. 23.   **Fig. 23** 2. Place UNIT into record mode. 3. Supply 1 kHz signal (−24 dB) from AF oscillator, through ATT, to LINE IN. 4. Adjust ATT until monitor level at LINE OUT becomes 0.42 V (−7 dB). 5. Make recording. 6. Playback recorded tape, and make sure the value at LINE OUT on VTVM becomes 0.42 V. 7. If measured value is not 0.42 V, adjust VR9 (L-CH), VR10 (R-CH) (See fig. 30 on page 19). 8. Repeat from step (2). **How To Check Recording Current**  **Fig. 24** 1. Test equipments connection is shown in fig. 24. 2. Stop bias oscillation by unsoldering a wire (C) shown in adjustment parts location on page 19. 3. Supply 1 kHz signal (−24 dB) again and adjust ATT until monitor level at LINE OUT becomes 0.42 V. 4. Measure voltage and then calculate recording current by formura given below. $\text{Recording current} = \frac{\text{Value read on VTVM (V)}}{10\ (\Omega)}$ **Standard Value: 40μA** 5. At this time, set the tape selector switch to CrO_2 position and confirm variation of recording current. **Standard Value: 60μA±1 dB**	* Record/Playback Mode * Record Level Control ...MAX. * Standard Input Level: MIC ..... −70±3 dB LINE IN ..... −24±3 dB DIN ..... −36±3 dB TUNER ..... −20±3 dB R25, R26 are shown in AMP circuit board on page 24.

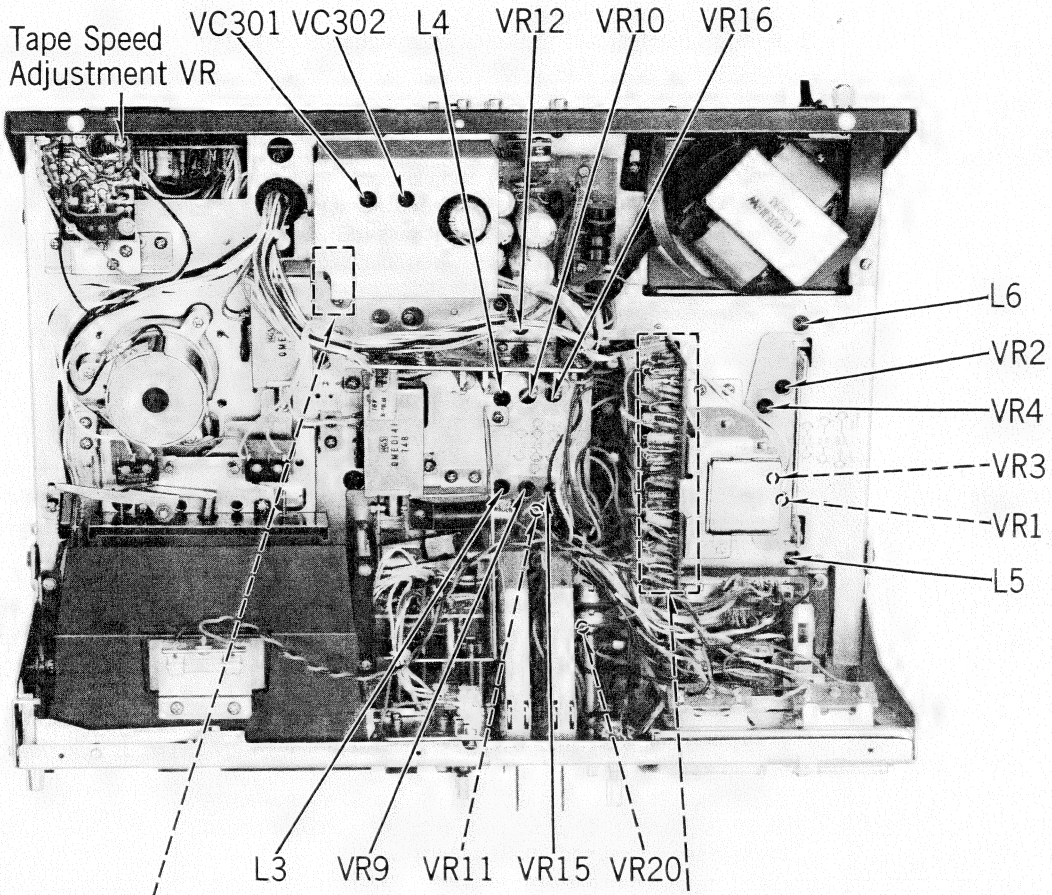
ITEM	MEASUREMENT & ADJUSTMENT	REMARKS
Level Meter Equipments: * VTVM * Oscilloscope * AF Oscillator * ATT	1. Test equipments connection is shown in fig. 22. 2. Supply 1 kHz signal (−7 dB) from AF oscillator, through ATT, to LINE IN jack. 3. Adjust record level control VR so that monitor level at LINE OUT becomes 0.42 V. 4. Adjust VR15 (L-CH), VR16 (R-CH) so that VU meter indicates 0 VU (See adjustment parts location on page 19).	* Record Mode * Balance Control ...Center
Overall Distortion Equipments: * Distortion Meter * AF Oscillator * ATT * Oscilloscope * Test Tape (Reference Blank Tape)...C-RA	1. Test equipments connection is shown in fig. 25. 2. Supply 1 kHz signal to LINE IN and adjust ATT so that output level at LINE OUT indicates 0.42 V (−7 dB). 3. Make recording. 4. Play back, and measure distortion factor of output signal. 5. When the distortion factor does not satisfy the standard, check the bias current. When the bias current is lower than standard, distortion will increase. Care should be exercised in the adjustment because the bias current also has an influence on the overall frequency response. Refer to "The Overall Frequency Response" and "The Bias Current Adjustment".  **Fig. 25** Standard Value: less than 2%.....Normal less than 3.2%...CrO_2	* Record Level Control ...MAX.

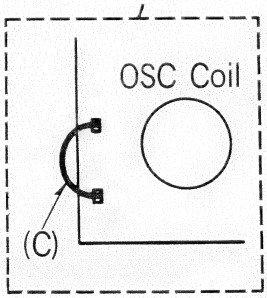
ITEM	MEASUREMENT & ADJUSTMENT	REMARKS
Overall Frequency Response Equipments: * VTVM * AF Oscillator * ATT * Test Tape (Reference Blank Tape) ...C-RA for Normal ...C-RF for CrO_2	**Note:** Before measuring and adjusting, make sure of the playback frequency response (For the method of measurement, please refer to the playback frequency response). 1. Test equipments connection is shown in fig. 23. 2. Load reference blank test tape and place UNIT into record mode. 3. Supply 1 kHz signal from AF oscillator, through ATT to LINE IN. 4. Adjust ATT so that input level is −20 dB below standard recording level (standard recording level=0 VU). 5. At this time, LINE OUT level indicates 0.42 V. 6. Record each frequency 40 Hz, 100 Hz, 700 Hz, 1 kHz, 2 kHz, 7 kHz, 10 kHz and 12 kHz (13 kHz for CrO_2) at the same level. 7. Play back and express in dB the difference between playback output level of each frequency based on playback output level of 1 kHz. 8. Make sure that the measured value is within the range specified in the overall frequency response chart. Overall Frequency Response Chart (Normal)  **Fig. 26** 9. Set the tape selector switch to CrO_2 position. 10. Measure as same as manner above. 11. Make sure that the measured value is within the range specified in the overall frequency response chart for CrO_2 tape below. Overall Frequency Response Chart (CrO_2)  **Fig. 27** **MPX Filter out position, normal tape** In case the line output deviation is not within the standard on the basis of 1 kHz=0 dB after measuring the overall frequency response: 1. If the frequency response varies from about 4~6 kHz in the middle-frequency range and becomes out of standard in the high-frequency range, adjust it using the bias current. 2. If the frequency response is flat in the middle-frequency range and varies excessively in the high-frequency range, adjust it using the peaking coil for recording equalization. **Adjustment 1—Using bias current**  **Fig. 28**	* Record/Playback Mode * Record Level Control ...MAX.

ITEM	MEASUREMENT & ADJUSTMENT	REMARKS
Overall Frequency Response (As a Standard for Adjustment)	1. When the frequency response between the middle- and high-frequency range becomes higher than the standard value, as shown by the solid line in the above diagram, increase the bias current (by turning VC301 or VC302 clockwise). 2. When it becomes lower, as shown by dotted line, reduce the bias current (by turning VC301 or VC 302 counter-clockwise). **Note:** 1. For adjustment when the bias current is lower than the standard value 0.12 mA, use the procedure indicated in adjustment 2, because reducing the bias current beyond this point may worsen the distortion factor. 2. For the method of bias current measurement, refer to "Bias Current Adjustment" on page 12. **Adjustment 2—Using the peaking coil for recording equalization**  **Fig. 29** 1. When the frequency response is flat in the middle-frequency range and makes a sharp rise in the high-frequency range, as shown by the solid line above, reduce the inductance of the peaking coil (L3 or L4 ; for recording equalization), thereby reducing the amount of recording equalization (by turning L3 or L4 in the direction opposite to that of the adjustment arrow marked on the Unit). 2. When it shows a sharp drop in only the high-frequency range, as shown by the dotted line, increase the inductance of the peaking coil, thereby increasing the amount of recording equalization (by turning L3 or L4 in the same direction as the adjustment arrow attatched on the Unit). **Adjustment of the overall frequency response by using CrO_2 tape.** **NOTE:** 1. Dolby NR/MPX Filter switch is set to both OUT position. 2. Tape selector switch is set to CrO_2 position. 3. Overall frequency response for CrO_2 must measured after confirmation of overall gain using normal tape. 4. Never adjust the bias current. 5. Must use technics CrO_2 tape. **Adjustment method** 1. In case the overall frequency response in the high-frequency range 10~14 kHz is higher than the standard value, increase the resistance of VR11 or VR12 (recording equalization curve controls for CrO_2 frequency response), which is done by turning in the direction opposite to that indicated on the adjustment label attatched on the Unit. 2. Overall frequency response in the high-frequency range, 10~14 kHz, is lower than the standard value, decrease the resistance of VR11 or VR12, which is done by turning in the same direction as indicated on the adjustment label.	

ITEM	MEASUREMENT & ADJUSTMENT	REMARKS
Overall S/N Ratio Equipments: * VTVM * AF Oscillator * ATT * Oscilloscope * Test Tape (Reference Blank Tape)...C-RA	1. Test equipments connection is shown in fig. 23. 2. Supply 1 kHz signal (−14 dB), and adjust record level control so that VU meter indicates 0 VU. 3. Further adjusting ATT, increase input signal by 4 dB. (Line output level: 0.42 V (−7 dB) +4 dB=0.7 V (−3 dB)) 4. Make recording. 5. Make another recording without supplying signal (disconnect input plug from LINE IN). 6. Rewind to recorded part and playback. 7. Measure output signal level and no signal level (noise), and determine the ratio in decibels (dB). 8. The value is difference between "playback S/N and overall S/N", but for decibel calculation refer to "Playback S/N measurement" on page 11. **Standard Value: Greater than 47 dB (without NAB filter)**	* Record/Playback Mode * Record Level Control ...MAX * Erase the tape with a bulk tape eraser.
Dolby NR Circuit Equipments: * VTVM * AF Oscillator * ATT * Oscilloscope	1. Place UNIT into record mode, set the Dolby NR switch to OUT position and supply to LINE IN to obtain −34.5 dB at TP3 (L-CH), TP4 (R-CH) (frequency 5 kHz). 2. Confirm that the value at IN position is 8 dB greater than the value at OUT position of Dolby NR switch. 3. When it is not in condition above, adjust as follows. 4. Set VR401 (L-CH), VR402 (R-CH) to maximum. 5. Set the Dolby NR switch to IN position. 6. At this time adjust VR403 (L-CH), VR404 (R-CH) so that the reading of VTVM become 10 dB greater than the value in step (1) above. 7. Adjusting VR401 (L-CH), VR402 (R-CH), make the reading of VTVM become 2 dB smaller than the value obtained through the adjustment in step (6) above.	* Record Mode * Record Level Control ...MAX. * Stop the bias oscillation by unsoldering a wire (C) shown in adjustment parts location on page 19.
Dolby FM Equipments: * VTVM * AF Oscillator * ATT * Oscilloscope	1. Test equipments connection is shown in fig. 22. 2. Place UNIT into record mode. 3. Set the Dolby FM switch to IN position and FM CAL VR, VR21 (L-CH), VR22 (R-CH) to maximum. 4. Supply 5 kHz signal, and adjust ATT so that output level at LINE OUT becomes 580 mV. 5. Supply 5 kHz signal (22 dB smaller than the input level above) to tuner input jack (selector switch: tuner). 6. Confirm that the value at IN position is 8 dB greater than OUT position of Dolby NR switch.	* Record Mode * Dolby FM Switch...IN * De-Emphasis Switch ...Conventional Position
De-Emphasis Charactaristic Equipments: * VTVM * AF Oscillator * ATT * Oscilloscope	1. Test equipments connection is as same as above. 2. Place UNIT into record mode. 3. Set the Dolby FM switch to IN position and FM CAL VR21 (L-CH), VR22 (R-CH) to maximum. 4. Set De- Emphasis switch to 75μs position. 5. Supply 100 Hz signal, to TUNER IN and adjust ATT so that output level at LINE OUT becomes 58 mV. (selector switch: TUNER) 6. Change De-Emphasis switch to 25μs position and confirm that the value at LINE OUT is 3 dB±1 greater than the value for 75μs position.	* Record Mode * Source Selector...Tuner

ADJUSTMENT PARTS LOCATION





NOTE: VR11 can be adjusted from back side.

Dolby Circuit Board

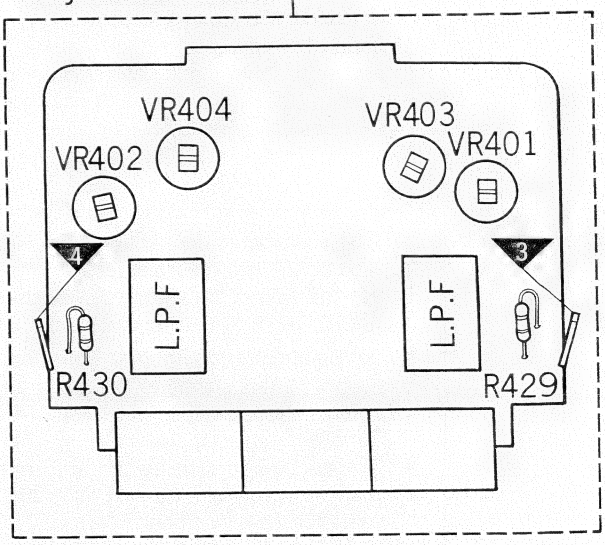
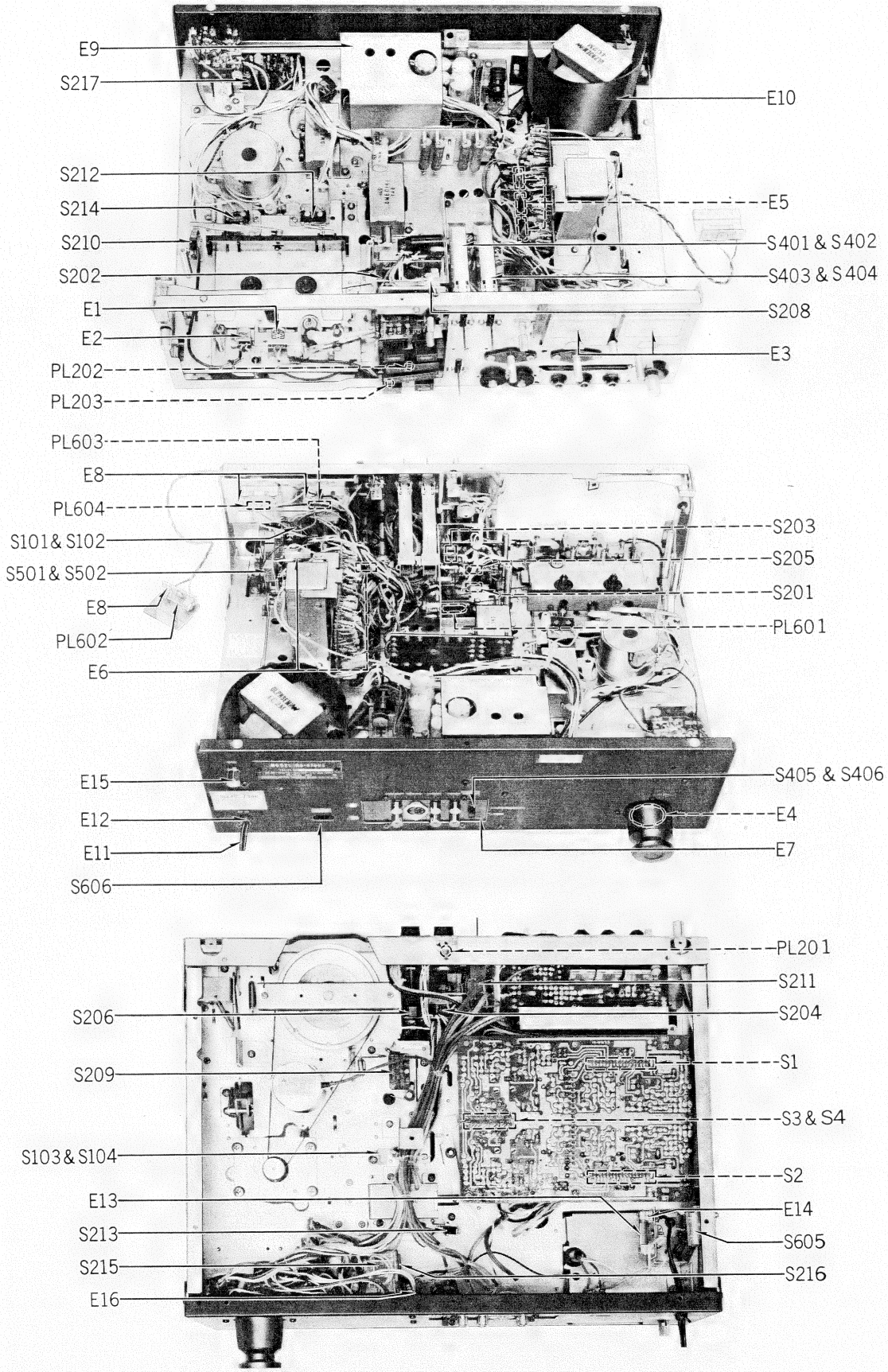


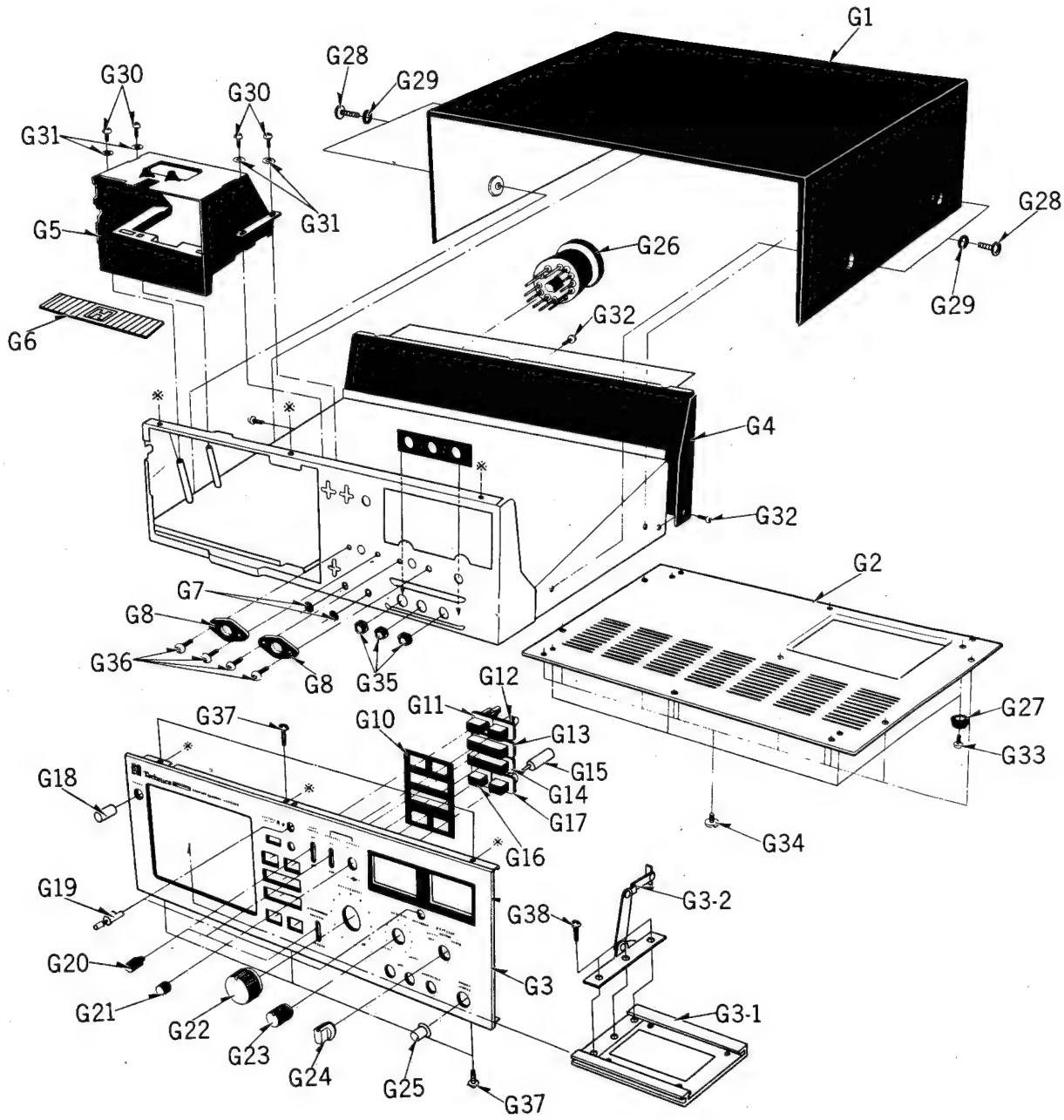
Fig. 30

※ Dolby is the trade mark of Dolby Laboratories Inc.

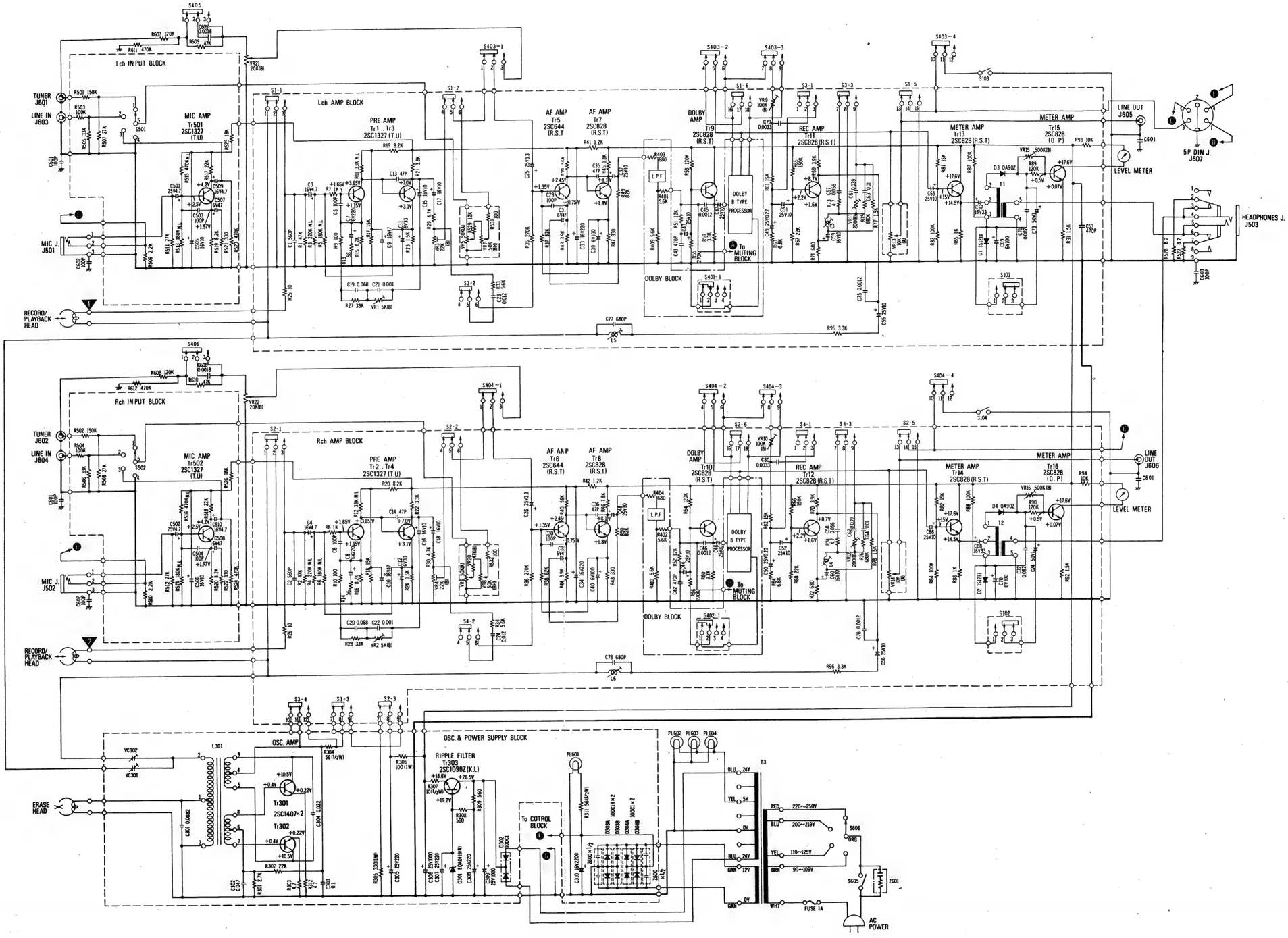
ELECTRICAL PARTS LOCATION



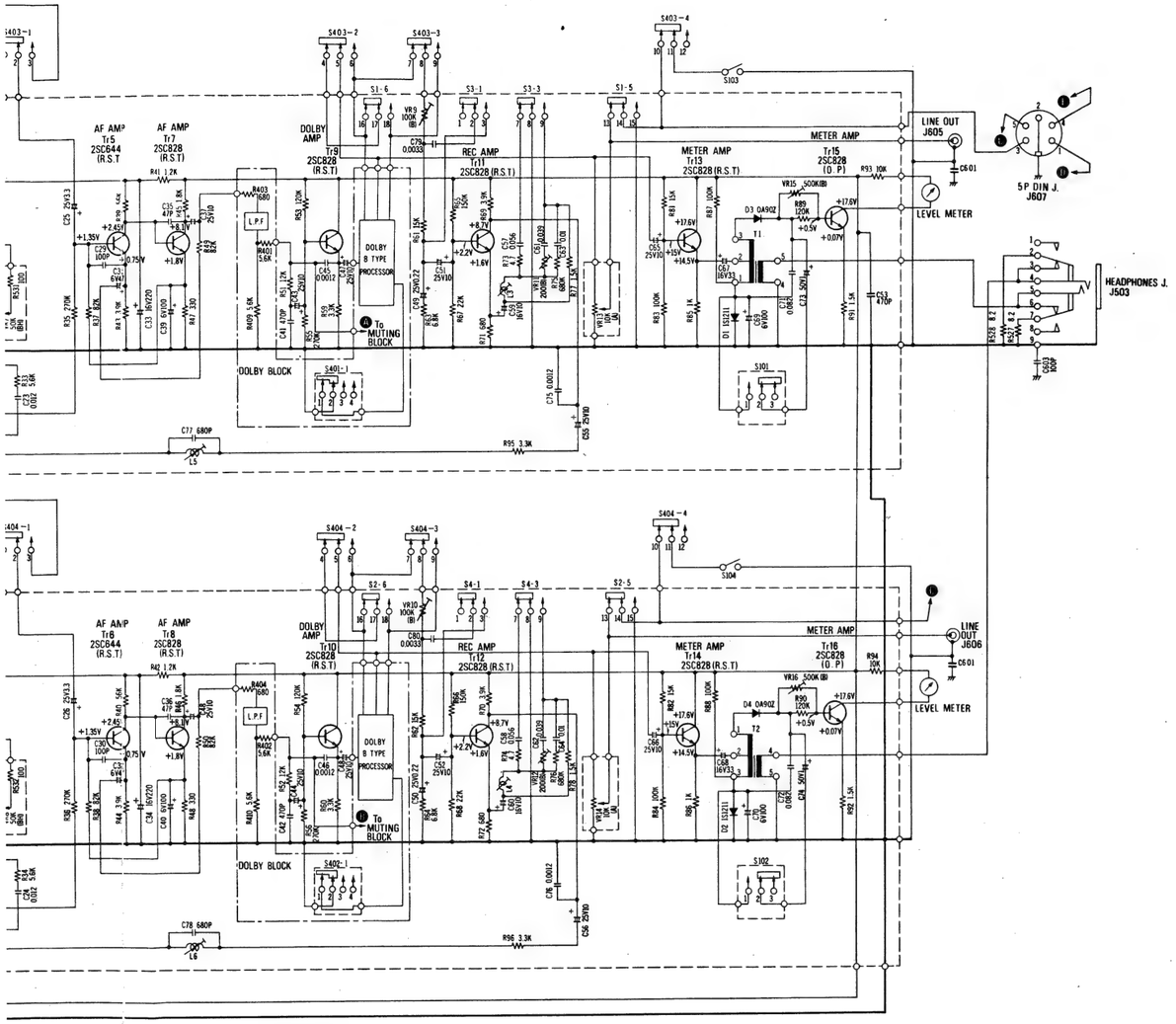
CABINET PARTS



SCHEMATIC DIAGRAM MODEL RS-676US



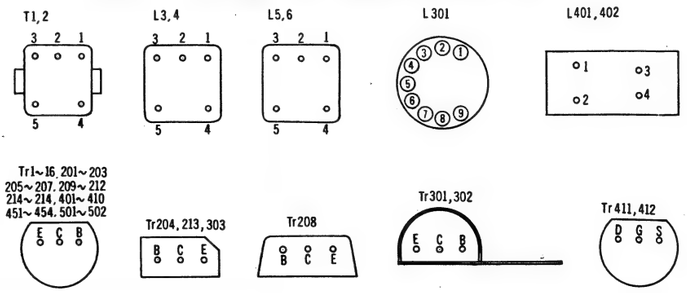
RS-676US



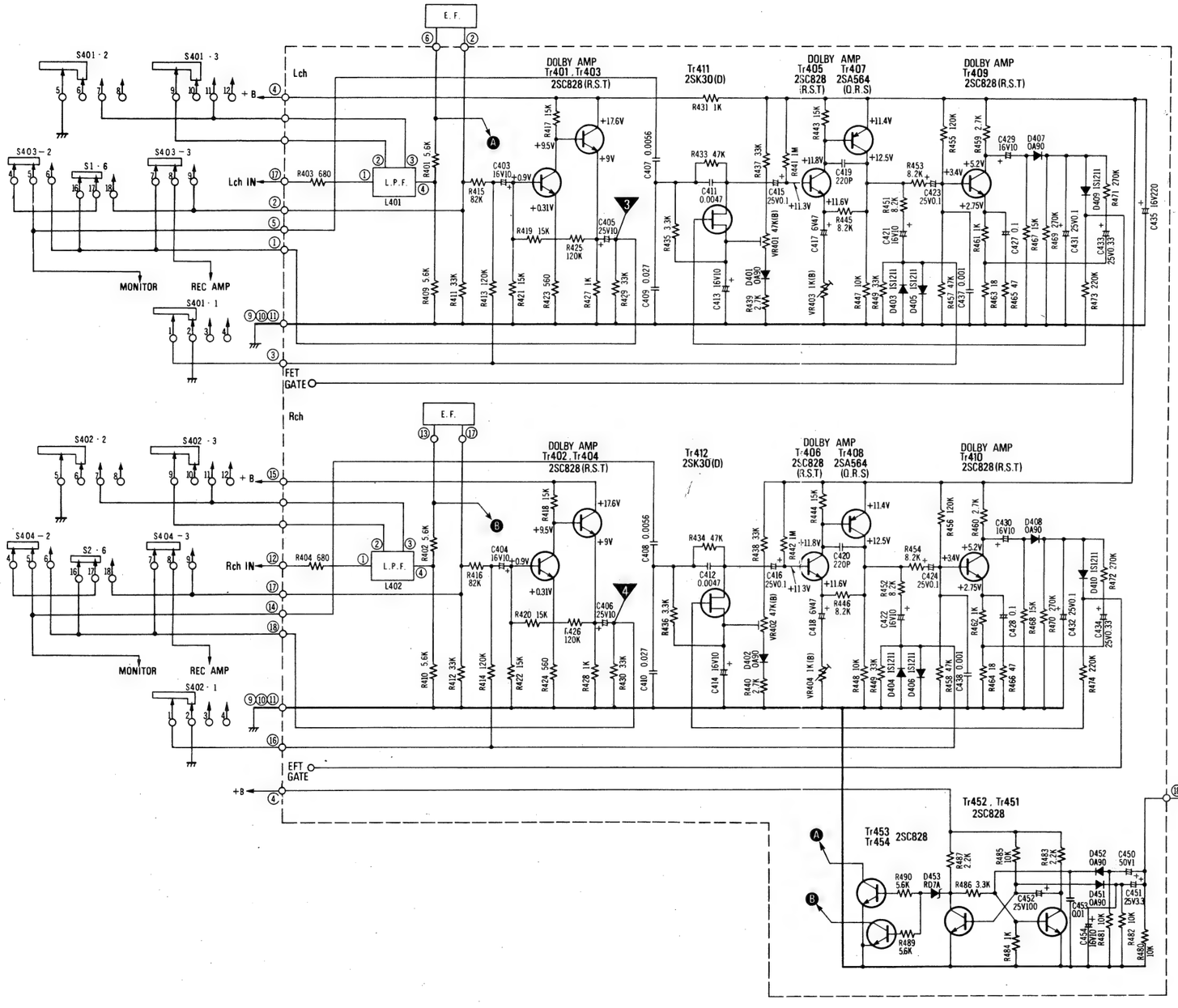
NOTE:

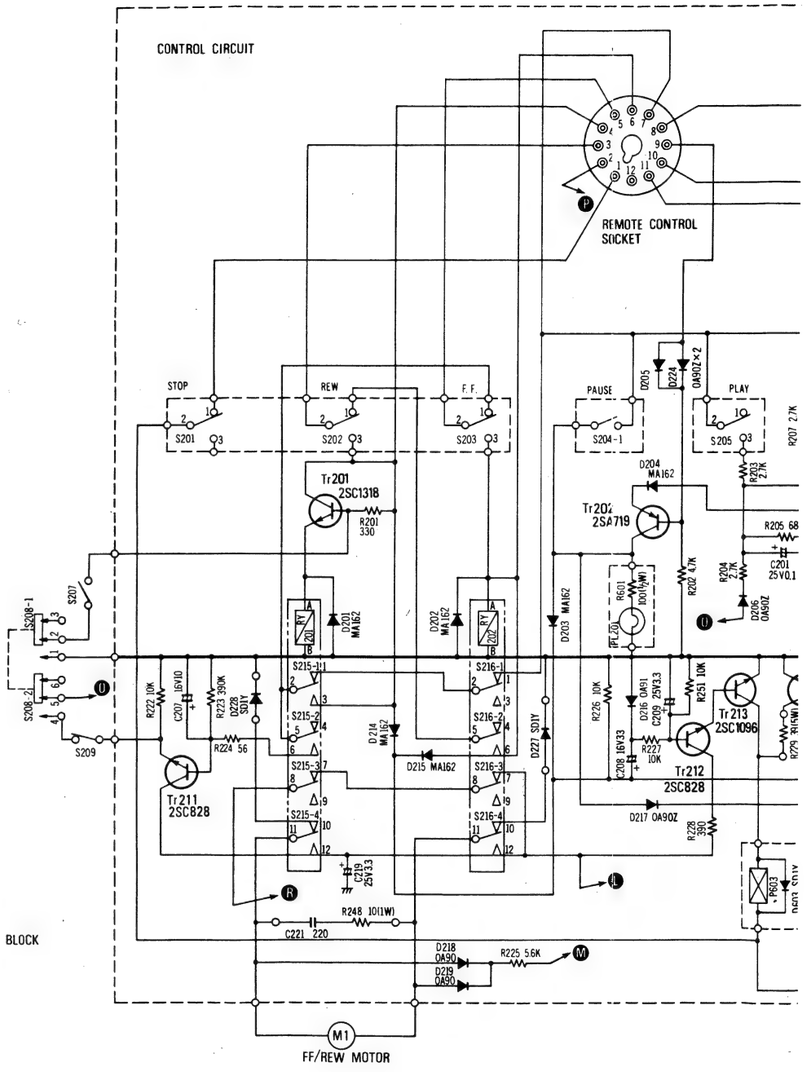
1. S1-1～S1-6, S2-1～S2-6 .....Record/playback select switch (shown in playback position).
2. S3-1～S3-3, S4-1～S4-3 .....Tape select switch (shown in normal position).
3. S101, S102 .....Peak check switch (shown in OFF position).
4. S103, S104 .....Stop muting switch.
5. S201 .....Stop switch.
6. S202 .....Rewind switch.
7. S203 .....Fast forward switch.
8. S204 .....Pause switch.
9. S205 .....Play switch.
10. S206 .....Record switch.
11. S207 .....Memory tape counter switch.
12. S208 .....Memory & play switch.
13. S209 .....Memory & play switch.
14. S210 .....Power switch (close when cassette in).
15. S211 .....Tape select switch.
16. S212 .....Automatic tape select switch.
17. S213 .....Current save switch.
18. S214 .....Record detecting switch (close when cassette with knob out tub in).
19. S215 .....Rewind relay switch.
20. S216 .....Fast forward relay switch.
21. S217 .....Auto stop relay switch.
22. S401-1～S401-3, S402-1～S402-3...Dolby NR switch.
    1...NR: OUT, MPX filter: OUT, 2...NR: IN, MPX filter: IN,
    3...NR: IN, MPX filter: OUT.
23. S403-1～S403-4, S404-1～S404-4...Dolby FM switch (shown in OUT position).
24. S405, S406 .....Dolby FM DE-EMPHASIS switch.
25. S501, S502 .....Input select switch (shown in tuner position).
26. S605 .....Power ON/OFF switch.
27. S606 .....AC power voltage selector.
28. VR1, 2 .....Playback equalizer adjustment VR.
29. VR3, 4 .....Playback gain adjustment VR.
30. VR5, 6 .....Record level control.
31. VR7, 8 .....Balance control.
32. VR9, 10 .....Record level adjustment VR.
33. VR11, 12 .....Record equalizer adjustment VR CrO_2.
34. VR13, 14 .....Playback level control.
35. VR15, 16 .....Level meter adjustment VR.
36. VR20 .....Balance adjustment VR.
37. VR21, 22 .....Dolby FM CAL VR.
38. VR401～404 .....Dolby adjustment VR.
39. PL201 .....Pause indicator lamp.
40. PL202 .....Play indicator lamp.
41. PL203 .....Record indicator lamp.
42. PL601 .....Auto stop operator lamp.
43. PL602 .....Pilot lamp for cassette cabin.
44. PL603, 604 .....Meter light (L, R).
45. Resistor values are in ohms (Ω), 1/4 watt unless specified otherwise.
    K=1,000Ω.
46. Capacitor values are in microfarads (μF) unless specified otherwise.
    P=Pico-farads.
47. The mark (▼) shows test point. e.g. ▼=Test point 1.
48. All measurements are under no signal conditions with volume at minimum position.
    Use VTVM for voltage measurements.
49. Abbreviation of color indications for power transformer termination.
    BLK...Black, BLU...Blue, BRN...Brown, GRY...Gray, ORG...Orange, RED...Red,
    WHT...White, YEL...Yellow.

TRANSISTOR TRANSFORMER & COIL TERMINATION (BOTTOM VIEW)



SCHEMATIC DIAGRAM MODEL RS-676US





DOLBY AMP
Tr405 2SC828 (R.S.T)
Tr407 2SA564 (Q.R.S)

DOLBY AMP
Tr409 2SC828 (R.S.T)

DOLBY AMP
Tr406 2SC828 (R.S.T)
Tr408 2SA564 (Q.R.S)

DOLBY AMP
Tr410 2SC828 (R.S.T)

CONTROL CIRCUIT

REMOTE CONTROL SOCKET

12P DUMMY PLUG

STOP
REW
F.F.
PAUSE
PLAY
REC

Tr201 2SC1318
Tr202 2SA719
Tr203 2SC828
Tr204 2SC1096Z
Tr205 2SC1384
Tr206 2SC828
Tr207 2SC1318
Tr208 2SD288
Tr209 2SC1384
Tr210 2SC828
Tr211 2SC828
Tr212 2SC828
Tr213 2SC1096
Tr214 2SC1384
Tr215 2SA564
Tr216 2SC828
Tr217 2SC945
Tr218 2SC945
Tr219 2SC1318
Tr451 2SC828
Tr452 2SC828
Tr453 2SC828
Tr454 2SC828

CdS

M1 FF/REW MOTOR

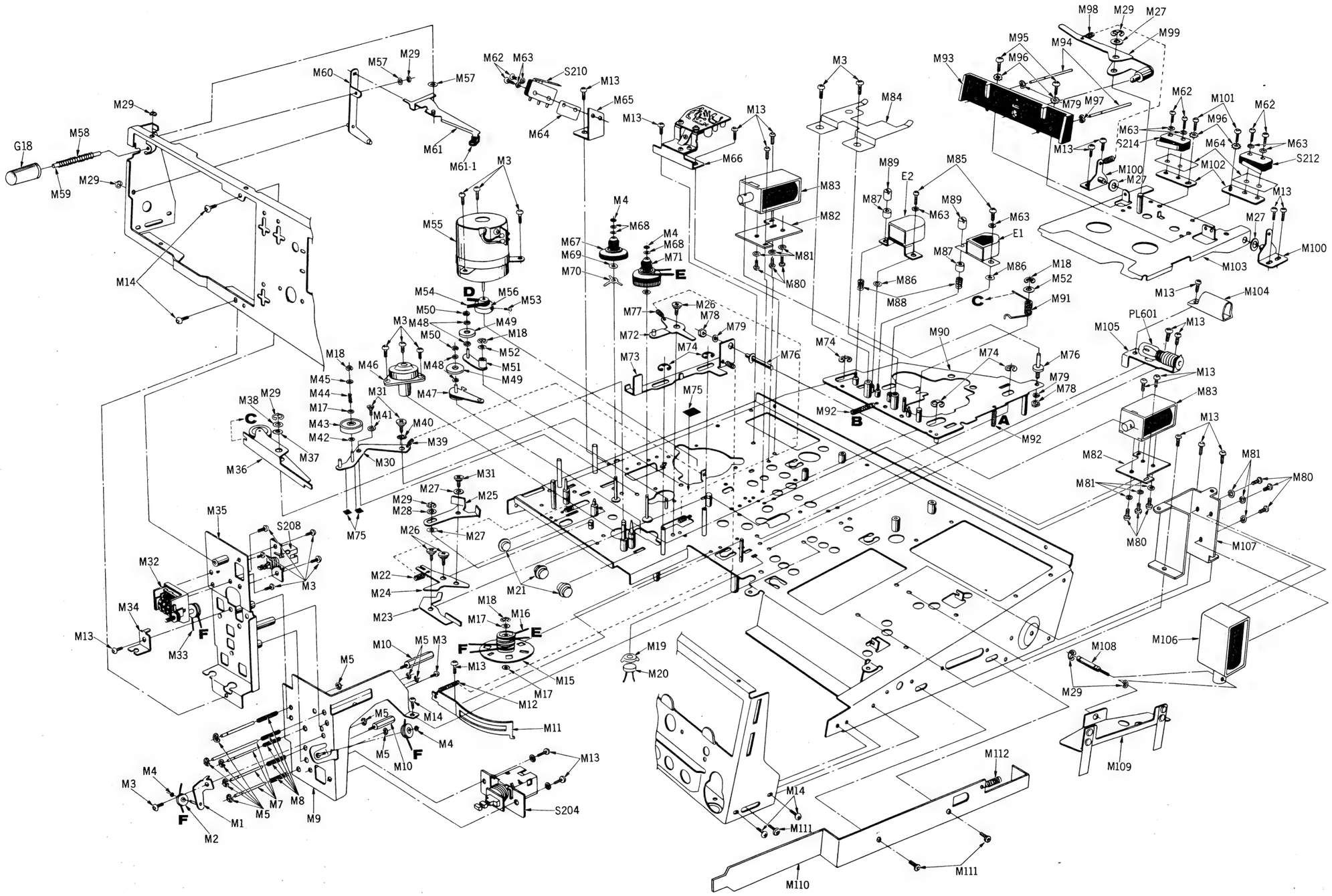
M2 CAPSTAN MOTOR

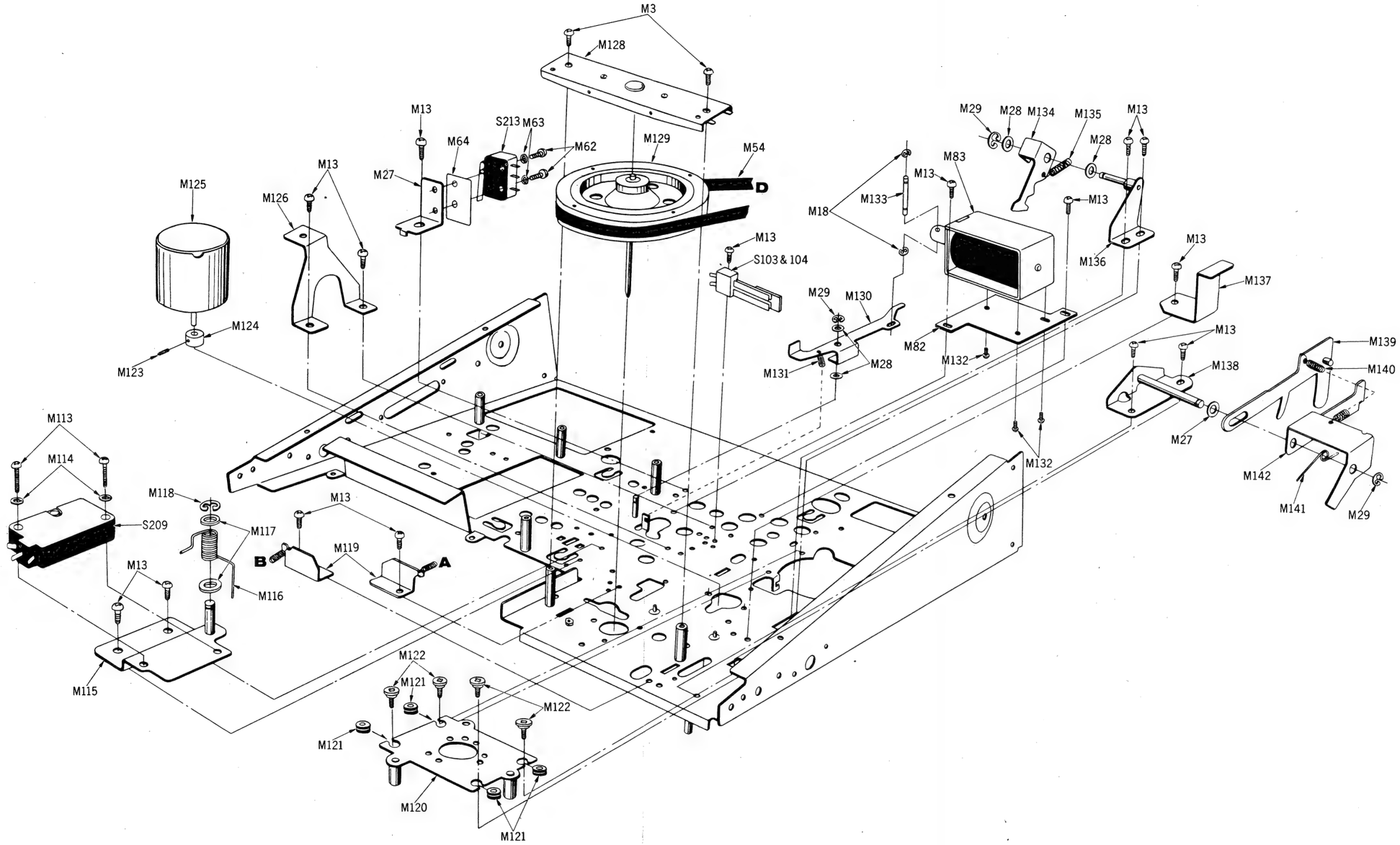
MUTING BLOCK

OSC POWER SUPPLY BLOCK

CONTROL BLOCK

EXPLODED VIEWS



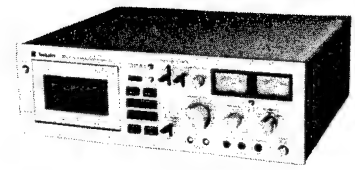


Printed in Japan

REPLACEMENT PARTS LIST

MODEL RS-676US

National Panasonic



RS-676US

NOTE:

1. Be sure to make your orders of Replacement Parts according to this List.
2. "**A**, **B** and **C**" in "Rank" Column indicates the recommended stock of replacement parts. Refer to the recommended stock table on last page.
3. "Ⓝ" in "Remarks" Column indicates New Parts.
4. "ISO" in "Remarks" Column indicates ISO Screw or Nut.
5. "Ⓚ" in indicates the serrated parts with 18 notches.

NOTA:

1. Habrá que asegurarse que los pedidos de piezas de repuesto se hagan según esta lista.
2. "**A**, **B** y **C**" marcadas en la columna "Rank" indican el surtido que se recomienda tener de dichas piezas de repuesto.
3. "Ⓝ" marcado en la columna "Remarks", quiere decir que las piezas son nuevas.
4. "ISO" marcado en la columna "Remarks", quiere decir que es un tornillo o tuerca "ISO".
5. "Ⓚ" indica las partes dentadas con 18 ranuras.

NOTE:

1. Bien s'assutet de se conformer à la liste suivante pour les commandes de pièces de rechange.
2. "**A**, **B** et **C**", dans la colonne "Rank", indiquent le stock recommandé de pièces de rechange. Se reporter en dernière page au tableau des stocks/recommandès.
3. "Ⓝ", dans la colonne "Remarks", indique les pièces nouvelles.
4. "ISO", dans la colonne "Remarks", indique une vis ou un ècrou ISO.
5. "Ⓚ" indique les pièces cannelèes à 18 crans.

HINWEIS:

1. Bestellen Sie Ihre Ersatzteile genau nach dieser Liste.
2. "**A**, **B** und **C**" in der "Rank" Spalte zeigt Ihnen den Vorrat der Ersatzteile an.
3. "Ⓝ" in der "Remarks" Spalte bedeutet "neue Teile".
4. "ISO" in der "Remarks" Spalte bedeutet ISO-Schraube oder Mutter.
5. "Ⓚ" bezeichnet die gezähnten Teile mit 18 Zähnen.

按:

1. 關於代用零件之訂購，務請依照此表而行之爲荷。
2. 「等級」(Rank) 一欄中之 "**A**, **B**, **C**" 標記表示該零件有存貨，值得介紹。
   請參照最後一頁的「值得介紹存貨表」。
3. 「備考」(Remarks) 一欄中之 "Ⓝ" 形符號標記表示該零件爲新出品。
4. 「備考」(Remarks) 一欄中之 "ISO" 符號標記表示國際標準化機構 (ISO) 式螺絲或螺母。
5. "Ⓚ" 形符號標記表示備有18個凹槽的鋸齒狀零件。

Rank	Ref. No.	Description	Part No.	Pcs/ Set	Price (Per Pce.)		Remarks
		MECHANICAL PARTS					
C	M1	Guide Pulley Angle Assembly	QXA0306A	1			(N)
A	M2	Guide Pulley	QDP1628	1			(N)
C	M3	Sems Screw ⊕3×6	XYN3+6S	19			COMMON (ISO)
C	M4	Nylon Washer	QWQ1124	4			"
C	M5	Stop Ring 2.3φ	XUC23FT	10			"
C	M6	Switch Shaft	QMN1826	1			(N)
C	M7	Switch Shaft-A	QMN1825	4			(N)
B	M8	Push Button Spring	QBC1178	5			RS-275US,276US, 279US
C	M9	Button Angle-B Assembly	QXA0302A	1			(N) (ISO)
C	M10	Pole	QMP1508	2			(N)
C	M11	Pulley Guard Plate	QMF1693	1			(N)
B	M12	Pause Rod Spring-1	QBT1422M	1			(N)
C	M13	Tapping Screw ⊕3×8	XTN3+8	34			COMMON
C	M14	Sems Screw ⊕3×6	XYN3+C6RS	5			" (ISO)
A	M15	Counter Connection Pulley Assembly	QXP0465	1			(N)
A	M16	Counter Belt-A	QDB0199B	1			(N)
C	M17	Tetoron Washer 3.2φ×6φ×0.25t	QBJ3290	3			RS-279US
C	M18	Stop Ring 2.5φ	XUC25FT	6			COMMON
C	M19	Cds Cover	QMH1180	1			(N)
A	M20	Cds	SR10E	1			(N)
B	M21	Roller	QDP1586	3			(N)
C	M22	Brake Lever Spring	QBT1757M	1			(N)
C	M23	Brake Release Lever	QML2681	1			(N)
C	M24	Brake Lever	QML2680	1			(N)
A	M25	Brake	QML2679	1			(N)
C	M26	Step Screw	QHQ1168	3			RQ-432S, 443S RS-260US
C	M27	Fiber Washer 4.2φ×9φ×0.5t	QBK7005	6			COMMON
C	M28	Fiber Washer 4.2φ×9φ×0.25t	QBK7007	5			"
C	M29	Stop Ring 3φ	XUC3FT	10			"
C	M30	Fast Forward Lever Assembly	QXL0809	1			(N)
B	M31	Step Screw	QHQ1177S	3			(N)
A	M32	Tape Counter	QDC0066	1			(N)
A	M33	Counter Belt-B	QDB0210	1			(N)

Rank	Ref. No.	Description	Part No.	Pcs/ Set	Price (Per Pce.)		Remarks
C	M34	Lamp Angle	QMA2287	1			N
C	M35	Button Angle-A Assembly	QXA0303A	1			N
A	M36	Pressure Roller Assembly	QXP0464	1			N
C	M37	Tetoron Washer 4.2φ×7φ×0.5t	QBJ3214	1			N
C	M38	Tetoron Washer 4.2φ×7φ×0.25t	QBJ3215	1			N
B	M39	Fast Forward Lever Spring	QBT1771M	1			N
C	M40	Tetoron Washer 4φ×9φ×0.5t	QBJ3216	1			N
C	M41	Tetoron Washer 4.2φ×12φ×0.5t	QBH0091	1			N
C	M42	Felt Washer	QBF1194	1			N
C	M43	Fast Forward Lever Idler	QDP1587	1			N
B	M44	Fast Forward Friction Spring	QBC1239	1			N
C	M45	Fiber Washer 3.2φ×9φ×0.5t	QBK7124	1			RQ-421DS
C	M46	Capstan Shaft Retainer Assembly	QXM0139	1			N
C	M47	Takeup Idler Lever Assembly	QXL0811	1			N
C	M48	Tetoron Washer	QBJ3291	4			N
B	M49	Idler	QXI0033	2			N
C	M50	Stop Ring 2φ	XUC2FT	2			COMMON
C	M51	Idler Lever	QXL0810A	1			N
C	M52	Fiber Washer 3.2φ×6φ×0.5t	QBK7121	2			COMMON
C	M53	Motor Puller Screw ⊕2.6×8	XSN26+8	1			"
A	M54	Capstan Belt	QDB0202A	1			N
A	M55	DC Motor (Capstan)	QDM1340D	1			N
A	M56	Motor Pulley	QDP1596B	1			N
C	M57	Fiber Washer	QBK7125	2			N
B	M58	Push Button Spring	QBC1178	1			RS-275US,276US, 279US
C	M59	Eject Shaft	QMN1842	1			N
C	M60	Eject Lever-B Assembly	QXL0817	1			N
C	M61	Eject Lever-A Assembly	QXL0908	1			N
C	M61-1	Cap	QKJ0048A	1			N
C	M62	Screw ⊕2×10	XSN2+10	10			COMMON
C	M63	Washer 2φ	XWA2B	8			"
C	M64	Shield Plate	QBK1163	4			RS-271US, 1030US
C	M65	Switch Angle-2	QMA2379	1			N
C	M66	Control Angle	QMA2319	1			N
A	M67	Supply Reel Table Assembly	QXD0032	1			N

Rank	Ref. No.	Description	Part No.	Pcs/ Set	Price (Per Pce.)		Remarks
C	M68	Washer	QBJ3224	3			RS-276US, 279US
C	M69	"	QBW0008	1			N
B	M70	Back Tension Spring	QBPK0032	1			RQ-309S, 413S, 436S
A	M71	Takeup Reel Table Assembly	QXD0040	1			N
C	M72	Takeup Idler Lever Assembly	QXL0803	1			N
C	M73	Pause Rod	QMR1394	1			N
C	M74	Stop Ring 5φ	XUC5FT	5			COMMON
C	M75	Spring Retainer	QBJ1500	3			N
C	M76	Plunger Shaft	QMN1889B	2			N
B	M77	Idler Lever Spring	QBT1440	1			RQ-241S
C	M78	Nut 3φ	XNG3EFX	2			COMMON
C	M79	Spring Washer 3φ	XWA3B	2			"
C	M80	Screw ⊕3×4	XSN3+4S	12			" ISO
C	M81	Spring Washer 3φ	XWA3BF	12			"
C	M82	Plunger Holding Plate	QMF1684	3			N
A	M83	Plunger	QME0141	3			RS-279US
B	M84	Cassette Holder	QMF1697	1			N
C	M85	Screw ⊖2×4	XSN2-4	2			COMMON
C	M86	Fiber Washer 3.2φ×6φ×0.25t	QBK7122	2			N
C	M87	Spacer	QMC0014	2			N
B	M88	Head Spring	QBC1235	2			N
C	M89	Head Azimuth Adjust Screw	QHQ1052	2			N
C	M90	Head Base Plate Assembly	QXK1479	1			N
B	M91	Pressure Roller Spring	QBN1378	1			N
B	M92	Head Base Plate Rewind Spring	QBT1750M	2			N
B	M93	Cassette Retainer	QGG0046B	1			N
C	M94	Switch Rod	QMR1388	2			N
C	M95	Screw ⊕2.6×6	XSN26+6	2			COMMON
C	M96	Lock Washer 2.6φ	XWC26B	4			"
C	M97	Stop Ring 1.5φ	XUC15FT	2			"
B	M98	Cassette Pressure Lever Spring	QBT1431M	1			N
C	M99	Cassette Pressure Lever Assembly	QXL0808	1			N
C	M100	Cassette Base Plate Holding Angle	QXA0292	2			N
C	M101	Screw ⊕2.6×4	XSN26+4	2			COMMON
C	M102	Switch Holding Plate	QMF1682	2			N

Rank	Ref. No.	Description	Part No.	Pcs/ Set	Price (Per Pce.)		Remarks
C	M103	Cassette Base Plate Assembly	QXK1478	1			(N)
B	M104	Lamp Cover	QBJ1879	1			RS-275US,276US, 279US
C	M105	Lamp Holding Angle Assembly	QXA0318	1			(N)
A	M106	Plunger (Record)	QME0128S	1			RS-275US·
C	M107	Plunger Holding Plate	QMA2268	1			(N)
B	M108	Plunger Pin	QMN1818	1			(N)
C	M109	Record/Playback Select Lever Assembly	QXL0804A	1			(N)
C	M110	Switch Rod	QMR1430	1			(N)
C	M111	Step Screw	XSNQ0004S	3			RS-840US
B	M112	Tension Arm Spring	QBT1239M	1			RS-715US
C	M113	Screw ⊕2.6×14	XSN26+14	2			COMMON
C	M114	Washer 2.6φ	XWA26B	2			"
C	M115	Switch Angle	QXA0301	1			(N)
C	M116	Switch Pin	QBS1101	1			(N)
C	M117	Washer	QBF1197	2			(N)
C	M118	Stop Ring 4φ	XUC4FT	1			COMMON
B	M119	Spring Hanger	QMA2315A	2			(N)
C	M120	Motor Holding Plate Assembly	QXH0193	1			(N)
C	M121	Rubber Cushion	QBG1431	4			(N)
B	M122	Step Screw	QMS1833	4			RS-260US,272US, 282US
B	M123	Motor Pulley Screw	XXA26D4F	1			(N)
A	M124	Motor Pulley	QDP1358A	1			(N)
A	M125	DC Motor (Fast Forward & Rewind)	QDM1339C	1			(N)
C	M126	Reinforcement Angle	QMA2318	1			(N)
C	M127	Switch Angle	QMA2314	1			(N)
B	M128	Flywheel Retainer Assembly	QXM0142	1			(N)
A	M129	Flywheel	QXF0096A	1			(N)
C	M130	Tape Selector Lever	QML2683	1			(N)
B	M131	Tape Selector Lever Spring	QBT1561	1			RS-275US,276US, 279US
C	M132	Sems Screw ⊕3×4	XYN3+4S	3			COMMON (ISO)
B	M133	Plunger Pin	QMN1817	1			(N)
C	M134	Click Lever	QML2685	1			(N)
B	M135	Click Lever Spring	QBT1758M	1			(N)
C	M136	Click Lever Angle Assembly	QXA0291	1			(N)
C	M137	Stopper	QMF1698	1			(N)

Rank	Ref. No.	Description	Part No.	Pcs/ Set	Price (Per Pce.)		Remarks
C	M138	Eject Lever Angle Assembly	QXA0300	1			N
C	M139	Eject Arm Assembly	QXL0835	1			N
B	M140	Pause Rod Spring-2	QBT1751M	1			N
B	M141	Eject Lever Spring	QBN1377	1			N
C	M142	Eject Lever	QML2693	1			N
		RESISTORS					
B	R1,2,433,434, 457,458	Carbon Resistor 47 KΩ 1/4 W	ERD14VJ473	6			
B	R3,4,473,474	" 220 KΩ 1/4 W	ERD14VJ224	4			
B	R5,6,513,514	" 180 KΩ 1/4 W	ERD14VJ184	4			
B	R7, 8, 85, 86, 2	11, 219, 230, 427, 428, 431,					
	461, 462, 484	" 1 KΩ 1/4 W	ERD14VJ102	13			
B	R9,10,531,532	" 100Ω 1/4 W	ERD14VJ101	4			
B	R11, 12, 27, 28,	233, 411, 412, 429, 430, 437,					
	438, 449, 450	, 505, 506					
		" 33 KΩ 1/4 W	ERD14VJ333	15			
B	R13, 14, 224	" 56Ω 1/4 W	ERD14VJ560	3			
B	R15, 16, 19, 20	, 241, 445, 446, 451, 452, 453,					
	454, 519, 520	" 8.2 KΩ 1/4 W	ERD14VJ822	13			
B	R17, 18, 61, 62	, 81, 82, 417, 418, 419, 420,					
	421, 422, 443	, 444, 467, 468					
		" 15 KΩ 1/4 W	ERD14VJ153	16			
B	R21, 22, 59, 60	, 95, 96, 232, 245, 435, 436, 486					
		" 3.3 KΩ 1/4 W	ERD14VJ332	11			
B	R23, 24, 77, 78	, 91, 92, 218, 237, 242					
		" 1.5 KΩ 1/4 W	ERD14VJ152	9			
B	R25, 26	" 10Ω 1/4 W	ERD14VJ100	2			
B	R29, 30, 202, 215, 236	" 4.7 KΩ 1/4 W	ERD14VJ472	5			
B	R33, 34, 220, 2	21, 225, 231, 401, 402, 409,					
	410, 489, 490	" 5.6 KΩ 1/4 W	ERD14VJ562	12			
B	R35, 36, 55, 56	, 469, 470, 471, 472					
		" 270 KΩ 1/4 W	ERD14VJ274	8			
B	R37,38,49,50, 415,416	" 82 KΩ 1/4 W	ERD14VJ823	6			
B	R39, 40	" 56 KΩ 1/4 W	ERD14VJ563	2			
B	R41, 42	" 1.2 KΩ 1/4 W	ERD14VJ122	2			
B	R43,44,69,70	" 3.9 KΩ 1/4 W	ERD14VJ392	4			
B	R45, 46	" 1.8 KΩ 1/4 W	ERD14VJ182	2			

Rank	Ref. No.	Description	Part No.	Pcs/ Set	Price (Per Pce.)		Remarks
B	R47, 48, 201, 239, 521, 522						
		Carbon Resistor 330Ω 1/4 W	ERD14VJ331	6			
B	R51, 52, 529	" 12KΩ 1/4 W	ERD14VJ123	3			
B	R53, 54, 89, 90, 413, 414, 425, 426, 455, 456, 607, 608						
		" 120KΩ 1/4 W	ERD14VJ124	12			
B	R63, 64, 234, 240, 253	" 6.8KΩ 1/4 W	ERD14VJ682	5			
B	R65, 66, 501, 502	" 150KΩ 1/4 W	ERD14VJ154	4			
B	R67, 68, 302, 517, 518	" 22KΩ 1/4 W	ERD14VJ223	5			
B	R71, 72, 75, 76, 205, 213, 403, 404						
		" 680Ω 1/4 W	ERD14VJ681	8			
B	R73, 74, 303, 312	" 4.7Ω 1/4 W	ERD14VJ4R7	4			
B	R83, 84, 87, 88, 244, 503, 504						
		" 100KΩ 1/4 W	ERD14VJ104	7			
B	R93, 94, 206, 208, 214, 222, 226, 227, 251, 252, 447, 448, 480, 481, 482, 485						
		" 10KΩ 1/4 W	ERD14VJ103	16			
B	R203, 204, 207, 212, 301, 439, 440, 459, 460						
		" 2.7KΩ 1/4 W	ERD14VJ272	9			
B	R209, 228	" 390Ω 1/4 W	ERD14VJ391	2			
B	R210	Metal Oxide Resistor 22Ω 5 W	ERX5ANJ220	1			
B	R216	Carbon Resistor 120Ω 1/4 W	ERD14VJ121	1			
B	R217,229,604	Metal Oxide Resistor 39Ω 5 W	ERX5ANJ390	3			
B	R223	Carbon Resistor 390KΩ 1/4 W	ERD14VJ394	1			
B	R235,507,508, 511,512	" 27KΩ 1/4 W	ERD14VJ273	5			
B	R243,465,466	" 47Ω 1/4 W	ERD14VJ470	3			
B	R238	" 150Ω 1/4 W	ERD14VJ151	1			
B	R246, 247	" 470Ω 1/4 W	ERD14VJ471	2			
B	R248	Solid Resistor 10Ω 1/2 W	ERC12GM100	1			
B	R304, 311	" 56Ω 1/2 W	ERC12GK560	2			
B	R305	" 330Ω 1 W	ERC1GK331	1			
B	R306	" 100Ω 1 W	ERC1GK101	1			
B	R307	" 10Ω 1/2 W	ERC12GK100	1			
B	R308,309,423, 424	Carbon Resistor 560Ω 1/4 W	ERD14VJ561	4			
B	R441, 442	" 1MΩ 1/4 W	ERD14VJ105	2			
B	R463, 464	" 18Ω 1/4 W	ERD14VJ180	2			
B	R483,487,509, 510	" 2.2KΩ 1/4 W	ERD14VJ222	4			

Rank	Ref. No.	Description	Part No.	Pcs/ Set	Price (Per Pce.)		Remarks
B	R515,516,523, 524,611,612	Carbon Resistor 470 KΩ 1/4 W	ERD14VJ474	6			
B	R525, 526	" 18 KΩ 1/4 W	ERD14VJ183	2			
B	R527, 528	" 8.2Ω 1/4 W	ERD14VJ8R2	2			
B	R601,602,603	Solid Resistor 100Ω 1/2 W	ERC12GK101	3			
B	R609, 610	Carbon Resistor 43 KΩ 1/4 W	ERD14VJ433	2			
		VARIABLE RESISTORS					
A	VR1, 2	Semi-fixed Variable Resistor (Playback Equalizer Adjust) 5 KΩ (B)	QVLS3AA00B53	2			Ⓝ
A	VR3, 4	Semi-fixed Variable Resistor (Playback Gain Adjust) 22 KΩ (B)	QVSR19R223B	2			Ⓝ
A	VR5, 6	Variable Resistor (Input Control) 50 KΩ (A)	EWFN9A070A54	1			Ⓝ
A	VR7, 8	Variable Resistor (Balance Control) 50 KΩ (BH)	EWFN8A070751	1			Ⓝ
A	VR9, 10	Semi-fixed Variable Resistor (Record Level Adjust) 100 KΩ (B)	QVLS3AA00B15	2			RS-736US
A	VR11, 12	Semi-fixed Variable Resistor (Record Equalizer Adjust for CrO_2) 200Ω (B)	EVLS3AA00B22	2			Ⓝ
A	VR13, 14	Variable Resistor (Playback Output Control) 10 KΩ (A)	EWKD1AK25A14	1			Ⓝ ✿
A	VR15, 16	Variable Resistor (Level Meter Adjust) 500 KΩ (B)	QVLS3AA00B55	2			Ⓝ
A	VR20,401,402	Semi-fixed Variable Resistor (Balance/Dolby Adjust) 47 KΩ (B)	QVSR19R473B	3			Ⓝ
A	VR21, 22	Semi-fixed Variable Resistor (FM Dolby Adjust) 20 KΩ (B)	EVHB8A222B24	2			Ⓝ
A	VR403, 404	Semi-fixed Variable Resistor (Dolby Adjust) 1 KΩ (B)	QVSR19R102B	2			Ⓝ
		CAPACITORS					
B	C1, 2	Styrol Capacitor 560 pF	ECQS1561JZ	2			
B	C3,4,509,510	Tantalum Capacitor 4.7μF	ECSZ16EF4R7	4			
B	C5, 6, 29, 30, 5	03, 504, 601, 602, 603					
		Ceramic Capacitor 100 pF	ECCD1H101K	9			
B	C7, 8	Electrolytic Capacitor 220μF	ECEA6V220L	2			
B	C9, 10, 205, 212, 214	" 47μF	ECEA16V47L	5			
B	C11, 12	" 33μF	ECEA6V33L	2			
B	C13,14,35,36	Ceramic Capacitor 47 pF	ECCD1H470K	4			
B	C15, 16, 17, 18, 414, 421, 422	59, 60, 206, 207, 403, 404, 413, 429, 430, 454, 505, 506					
		Electrolytic Capacitor 10μF	ECEA16V10L	19			
B	C19, 20	Mylar Capacitor 0.068μF	ECQM05683KZ	2			
B	C21, 22, 437, 438	" 0.001μF	ECQM05102KZ	4			
B	C23, 24	" 0.012μF	ECQM05123KZ	2			
B	C25,26,203, 209,219,451	Electrolytic Capacitor 3.3μF	ECEA25V3R3L	6			
B	C31,32,417, 418,507,508	" 47μF	ECEA6V47L	6			

Rank	Ref. No.	Description		Part No.	Pcs/ Set	Price (Per Pce.)		Remarks
B	C33, 34, 210, 435	Electrolytic Capacitor	220μF	ECEA16V220L	4			
B	C37, 38, 43, 44, 405, 406	47, 48, 51, 52, 55, 56, 65, 66,						
		"	10μF	ECEA25V10L	14			
B	C39, 40, 69, 70, 213	"	100μF	ECEA6V100L	5			
B	C41, 42	Styrol Capacitor	470 pF	ECQS1471JZ	2			
B	C45, 46, 75, 76	Mylar Capacitor	0.0012μF	ECQM05122KZ	4			
B	C49, 50	Aluminum Capacitor	0.22μF	ECAG25ER22	2			
B	C57, 58	Mylar Capacitor	0.056μF	ECQM05563KZ	2			
B	C61, 62	"	0.039μF	ECQM05393KZ	2			
B	C63, 64, 453	"	0.01μF	ECQM05103KZ	3			
B	C67, 68, 208, 216	Electrolytic Capacitor	33μF	ECEA16V33L	4			
B	C71, 72	Mylar Capacitor	0.082μF	ECQM05823KZ	2			
B	C73, 74, 450	Electrolytic Capacitor	1μF	ECEA50V1L	3			
B	C77, 78	Styrol Capacitor	680 pF	ECQS1681JZ	2			
B	C79, 80	Mylar Capacitor	0.0033μF	ECQM05332KZ	2			
B	C201,204,415, 416,423,424	Aluminum Capacitor	0.1μF	ECAG25ER1	6			
B	C202, 215	Electrolytic Capacitor	100μF	ECEA16V100L	2			
B	C217,218,303	Mylar Capacitor	0.1μF	ECQM05104KZ	3			
B	C220,501,502	Electrolytic Capacitor	4.7μF	ECEA25V4R7	3			
B	C221	"	220μF	ECEA16N220	1			
B	C301	Styrol Capacitor	0.0082μF	ECQF4822JZ	1			
B	C302	Mylar Capacitor	0.047μF	ECQM05473KZ	1			
B	C304	Styrol Capacitor	0.022μF	ECQF4223JZ	1			
B	C305,307,308	Electrolytic Capacitor	220μF	ECEA25V220L	3			
B	C306, 309	"	1000μF	ECEA25V1000L	2			
B	C310	"	2200μF	ECEA16V2200L	1			
B	C407, 408	Mylar Capacitor	0.0056μF	ECQM05562JZ	2			
B	C409, 410	"	0.027μF	ECQM05273JZ	2			
B	C411, 412	"	0.0047μF	ECQM05472JZ	2			
B	C419, 420	Ceramic Capacitor	220 pF	ECCD1H221K	2			
B	C431,432,427, 428	Aluminum Capacitor	0.1μF	ECAG25ER1K	4			
B	C433, 434	"	0.33μF	ECAG25ER33K	2			
B	C452	Electrolytic Capacitor	100μF	ECEA25V100L	1			
B	C605, 606	Mylar Capacitor	0.0018 pF	ECQM05182KZ	2			

Rank	Ref. No.	Description	Part No.	Pcs/ Set	Price (Per Pce.)		Remarks
		VARIABLE CAPACITOR					
B	VC301, 302	Trimmer Capacitor	QCV2118	1			RS-279US
		COMBINATION PARTS					
B	Z600	Capacitor Combination	B4BC0802	1			
B	Z601	CR Combination	QCR0008	1			
		TRANSISTORS					
A	Tr1,2,3,4,501, 502	Transistor	2SC1327(T,U)	6			RS-276US, 279US
A	Tr5, 6	"	2SC644(R,S,T)	2			RS-275US,276US, 279US
A	Tr7,8,9,10,11,1 212,216,401	2,13,14,15,16,203,206,210,211, 402,403,404,405,406,409,410,451,					
	452,453,454	"	2SC828(R)	28			RS-276US, 279US
A	Tr201,207,219	"	2SC1318	3			RS-1030US
A	Tr202	"	2SA719	1			Ⓝ
A	Tr204,213,303	"	2SC1096Z(K,L)	3			RS-279US
A	Tr205,209,214	"	2SC1384	3			RS-1030US
A	Tr208	"	2SD288	1			"
A	Tr215,407,408	"	2SA666H(R)	3			RQ-444US, RS-1030US
A	Tr217, 218	"	2SC945	2			RS-271US, 451US
A	Tr301, 302	"	2SC1407(Q,R)	2			RS-1030US
A	Tr411, 412	FET	2SK30(D)	2			Ⓝ
		SEMI CONDUCTORS					
A	D1, 2, 403, 404,	405, 406, 409, 410					
		Diode	1S1211	8			RQ-448FJS
A	D3, 4, 205, 206, 223, 224, 225	207, 217, 218, 219, 220, 221, 222, 401, 402, 407, 408, 451, 452					
		"	OA90Z	20			RQ-448FJS
A	D208,210,216	"	OA91	3			RQ-209S, 215S
A	D201, 202, 203,	204, 209, 211, 212, 213, 214, 215					
		"	MA162	10			Ⓝ
A	D226, 453	"	RD7A	2			RS-271US, 276US
A	D227,228,601, 602,603,604	"	FR202	6			RQ-444S
A	D229, 230	Silicon Controled Rectifier	M21C	2			RQ-215S, 413S
A	D301	Diode	EQA0119(R)	1			RS-279US

Rank	Ref. No.	Description	Part No.	Pcs/ Set	Price (Per Pce.)		Remarks
A	D302, 304A, 304B	Silicon Rectifier	10DC1	3			RS-276US,279US, 1030US
A	D303A, 303B	"	10DC1R	2			Ⓝ
		TRANSFORMERS					
A	T1, 2	Headphone Transformer	QLA0349	2			RS-275US
A	T3	Power Transformer	QLPN3EMH	1			Ⓝ
		COILS					
B	L3, 4	Peaking Coil (Record Equalizer Adjust)	QLQX0331W	2			Ⓝ
B	L5, 6	Peaking Coil (Bias Leak)	QLQX0731W	2			Ⓝ
B	L301	Oscillator Coil	QLB0153	1			RS-276US, 279US
B	L401, 402	Filter Coil	QLM9Z001W	2			Ⓝ
		SWITCHES					
B	S1, 2	Slide Switch (Record/Playback Selector)	QSS6202A	2			Ⓝ
B	S3, 4	Slide Switch (Tape Selector)	QSS8201A	1			Ⓝ
B	S101, 102	Push Switch (Peak Check)	QSW2201A	1			Ⓝ
B	S103, 104	Leaf Switch (Muting)	QSB0216	1			Ⓝ
B	S201	Micro Switch (Stop)	QSM0040A	1			RS-271US, 276US
B	S202	Micro Switch (Rewind)	"	1			"
B	S203	Micro Switch (Fast Forward)	"	1			"
B	S204	Push Switch (Pause)	QSW2201A	1			Ⓝ
B	S205	Micro Switch (Play)	QSM0040A	1			RS-271US, 276US
B	S206	Micro Switch (Record)	"				"
	S207	Tape Counter Switch	(Refer to M32)	(1)			
B	S208	Push Switch (Memory & Play)	QSW2201A	1			Ⓝ
B	S209	Micro Switch (Memory & Play)	QSM0028	1			Ⓝ
B	S210	Micro Switch (Control ON/OFF)	QSM0040A	1			Ⓝ
B	S211	Lever Switch (Tape Selector)	QST2201A	1			Ⓝ
B	S212	Micro Switch (Automatic Tape Selector)	QSM0040A	1			Ⓝ
B	S213	Micro Switch (Current Save)	"	1			
B	S214	Micro Switch (Record Detecting)	"	1			
B	S215	Relay Switch with RY201	QSK0408M	1			Ⓝ
B	S216	Relay Switch with RY202	"	1			Ⓝ
B	S217	Relay Switch with RY203	QSK0119	1			RS-275US,276US, 279US

Rank	Ref. No.	Description	Part No.	Pcs/ Set	Price (Per Pce.)		Remarks
B	S401, 402	Lever Switch (Dolby)	QST6302A	1			N
B	S403, 404	Lever Switch (FM Dolby)	QST8201A	1			N
B	S405, 406	Slide Switch (Dolby FM, DE-FMPH)	QSS1035	1			RS-715US
B	S501, 502	Rotary Slide Switch (Function Selector)	QSR4401T	1			N
B	S605	Push Switch (Power ON/OFF)	ESB1134SU	1			N
B	S606	Rotary Switch (Voltage Selector)	QSR0005B	1			RQ-226S
		JACKS					
C	J501, 502	MIC Jack	QJA0237	2			N
C	J503	Headphone Jack	QJA0238	1			N
	J601, 602, 603, 604, 65, 606, 607						
		Include Jack Board Assembly	(Refer to E7)	(1)			
		LAMPS					
A	PL201, 202, 203	Pilot Lamp	XAMQ30S200	3			N
A	PL601	Auto Stop Operator Lamp	XAMQ29W	1			N
A	PL602, 603, 604	Pilot Lamp for Level Meter	XAMR9S	3			RS-270US
		ELECTRICAL PARTS					
A	E1	Record/Playback Head	WY445AZ	1			RS-271US
A	E2	Erase Head	WY236Y	1			RS-276US, 279US
A	E3	Level Meter	QSL1052RN	2			N
B	E4	12P Socket	QJS0514	1			N
B	E5	6P Socket	QJS0754	3			N
B	E6	4P Socket	QJS0755	2			N
C	E7	Jack Board Assembly	QEJ0315	1			N
C	E8	Lamp Holder	QTF1052	3			N
C	E9	Shield Cover	QTS1291A	1			N
C	E10	Shield Plate	QTS1304	1			N
B	E11	AC Power Cord	QFC1022	1			N
C	E12	Cord Bushing	QTD1129	1			N
A	E13	Fuse 1A	XBA1E10NR3	1			RS-276US, 279US
A	E14	Fuse Holder	QTF1033	1			RS-276US, 715US
C	E15	Ground Terminal	QJT1027	1			N
C	E16	4P Lug Terminal	QJT4014	1			N

Rank	Ref. No.	Description	Part No.	Pcs/ Set	Price (Per Pce.)		Remarks
		CABINET PARTS					
A	G1	Case Cover	QGC1040	1			(N)
A	G2	Bottom Panel	QGC1041A	1			(N)
A	G3	Front Panel Assembly	QYP0518	1			(N)
A	G3-1	Cassette Lid Assembly	QYF0155	1			(N)
C	G3-2	Cassette Lid Holder	QXA0289	1			(N)
C	G4	Jack Base Plate	QMK1485	1			(N)
A	G5	Cassette Cover Assembly	QYR0152	1			(N)
A	G6	Head Cover Assembly	QYR0153	1			(N)
C	G7	Meter Felt	QBF5723	2			(N)
C	G8	Shaft Holder	QBJ1858A	2			(N)
C	G9	Shield Plate	QTW1099	1			(N)
C	G10	Spacer	QBH0045	1			(N)
B	G11	Rewind Button Assembly	QXB0229	1			(N)
B	G12	Fast Forward Button	QGO1150	1			(N)
B	G13	Play Button Assembly	QXB0227	1			(N)
B	G14	Stop Button Assembly	QXB0228	1			(N)
B	G15	Pause Button-A	QGO1155	1			(N)
B	G16	Record Button Assembly	QXB0230	1			(N)
B	G17	Pause Button-B Assembly	QXB0231	1			(N)
B	G18	Eject Button Assembly	QXB0232	1			(N)
B	G19	Pause Button Assembly (Memory)	QXB0233	1			(N)
B	G20	Lever Knob	QGT1260	3			(N)
B	G21	Volume Knob Assembly	QGT1264K	1			(N) (K)
B	G22	Volume Knob Assembly-C	QYT0331	1			(N)
B	G23	Volume Knob Assembly-D	QYT0332	1			(N)
B	G24	Selector Knob Assembly	QYT0333	1			(N)
B	G25	Push Button Assembly	QYT0114H1	1			(N)
C	G26	12P Plug Assembly	QEF0002	1			(N)
C	G27	Rubber Foot	QKA1065	4			(N)
C	G28	Screw (Black)	XSB4+8FZS	4			COMMON (ISO)
C	G29	Washer (Black)	XWJ4	4			"
C	G30	Screw ⊕3×6	XYN3+C6S	4			" (ISO)
C	G31	Washer 3φ	XWE3	4			"

Rank	Ref. No.	Description	Part No.	Pcs/ Set	Price (Per Pce.)		Remarks
C	G32	Screw ⊕3×6	XSN3+6ZS	5			" ISO
C	G33	Screw ⊕4×8	XSN4+8S	4			" ISO
C	G34	Screw (Red)	XTB4+8BR	11			"
C	G35	Jack Nut	QNQ1051	3			N
C	G36	Tapping Screw ⊕3×8	XTT3+8B	4			COMMON
C	G37	Screw ⊕3×6	XSB3+6S	6			" ISO
C	G38	Tapping Screw ⊕2×4	XTB2+4BFC	3			"
		ACCESSORIES					
A	A1	Cassette Music Tape	QFT6TCJNTBPZ	1			RS-276US, 279US
A	A2	Connection Cord-G	RP8125 (QEB0060P)	2			RS-279US, 1030US
C	A3	Accessory Bag	QFV0047	1			RS-275US, 279US
B	A4	Instruction Book	QQT0705	1			N
		PACKINGS					
C	P1	Inside Carton	QPN3082	1			N
C	P2	Inner Cushion-A	QPA0084	1			N
C	P3	Inner Cushion-B	QPA0085	1			N
C	P4	Dust Cover	XZB60×50A05	1			RS-275US, 276US
C	P5	Spacer-1	QPS0063	1			N
C	P6	Spacer-2	QPA0116	1			N
C	P7	Accessory Spacer	QPS0057	1			N

RECOMMENDED STOCK OF REPLACEMENT PARTS

Rank of Part	Estimated Selling Q'ty of Tape Recorder Set					
	Less than 50	100	300	500	1,000	2,000
A rank Parts	2	5	15	20	40	80
B rank Parts	1	2	5	10	20	40
C rank Parts	0	1	3	5	10	20

Printed in Japan

ORDER NO. ARD-5002011S

Service Manual

National
TAPE RECORDER
Panasonic

Supplementary

Date. Feb. 10, 1975 | No. MN-307

TAPE RECORDER

SUBJECT: Modifications and Corrections of RS-676US

In order to accommodate improvements in design of RS-676US, we have changed as follows.
And also, there were some mistakes of RS-676US Service Manual.
We hope you change and correct your own Service Manual.

CONTENTS

Matsushita Electric
Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka, Japan

SUBJECT: Modifications of RS-676US

A. Change of DC Motor (for Capstan)

REASON:

For improvement more performance and countermeasure of safety.

MODIFICATION:

M55 QMD1340D ⟶ QMD1340XPE

INTERCHANGEABILITY:

The new parts can be used to the former sets.

CHANGEOVER:

From the production of July, 1974. (From serial number RG4...onward)

B. Change of Takeup Reel Table Assembly

REASON:

In order to stabilize takeup tension.

MODIFICATION:

M71 QXD0040 ⟶ QXD0047A

INTERCHANGEABILITY:

The new parts can be used to the former sets.

NOTE:

Because the plate spring is not used to the new reel table assembly, the takeup tension can not be adjusted, but takeup tension is stabilized by new reel table asseembly.

CHANGEOVER:

From the production of September, 1974. (From seriel number RI4...onward)

C. Change of Idler Lever Spring

REASON:

In order to stabilize takeup tension which has been liable to become unstable at low temperature.

MODIFICATION:

M77 QBT1440 ⟶ QBT1409M

INTERCHANGEABILITY:

The new parts can be used to the former sets.

CHANGEOVER:

From the production of May, 1974. (From serial number RE4...onward)

D. Change of DC Motor (for Fast Forward & Rewind)

REASON:

In order to prevent malcontact of relay switch (S215, S216), the motor is changed. Malcontact of relay switch is occured by the reversed electromotive force of FF/REW motor.

MODIFICATION:

M125 QDM1339C ⟶ QDM1335

INTERCHANGEABILITY:

The new parts can be used to the former sets.

CHANGEOVER:

From the production of September, 1974. (From serial number RI4...onward)

E. Change of Plunger

REASON:

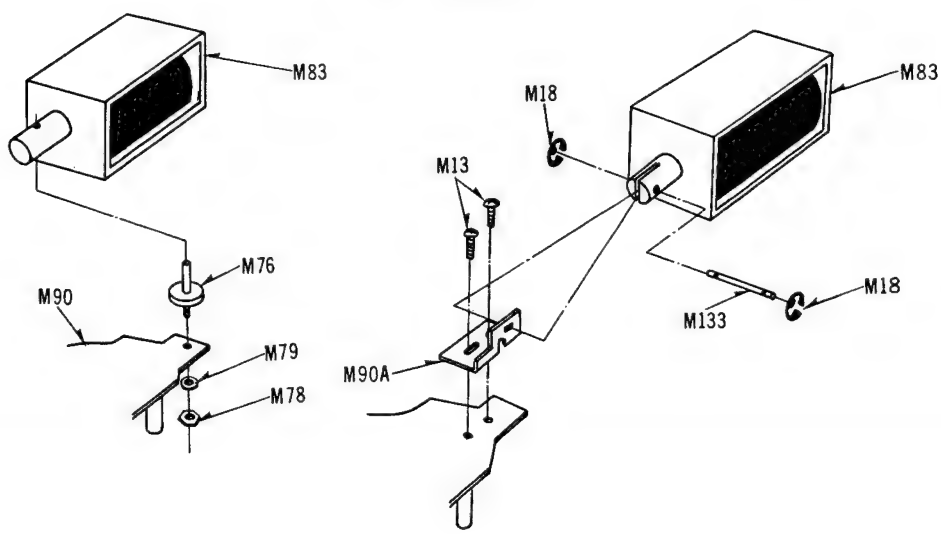
The connection between play plunger and head base plate is changed to stabilize action of plunger.

MODIFICATION:

Ref. No.	Description	Part No.		Remarks
		Old	New	
M13	Tapping Screw	XTN3+8 (34 pcs.)	XTN3+8FX (36 pcs.)	Added
M18	Stop Ring 2.5ϕ	XUC25FT (6 pcs.)	XUC25FT (8 pcs.)	—
M76	Plunger Shaft for Pause Plunger	QMN1889B	QMN1889C	(New)
M76	Plunger Shaft for Play Plunger	QMN1889B	QMN1817	(M133)
M78	Nut 3ϕ	XNG3EFX (2 pcs.)	XNG3EFX (1 pcs.)	—
M79	Spring Washer 3ϕ	XWA3B (2 pcs.)	XWA3B (1 pcs.)	—
M83	Plunger (3 pcs.)	QME0141	QME0141A	—
M90	Head Base Plate Assembly	QXK1479	QXK1479B	—
M90A	Angle-B	—	QMA2661	Added

Old Type **New Type**

(Play Plunger)



INTERCHANGEABILITY:

Old and new parts are not interchangeable, but if you change nine parts together listed above, they are mutually interchangeable.

CHANGEOVER:

From the production of November, 1974. (From serial number RK4...onward)

F. Change of Audio Amplifier Circuit (1)

REASON:

Many types of CrO_2 tapes are currently sold in the market. Because of the difference in tape sensitivity, there arises a little unevenness with the old type set which permits determination of CrO_2 gain by adjusting Normal for overall gain. For the new type we have so designed that overall gain can be adjusted finely when being CrO_2 mode. As stated in the service manual, first step, adjust VR9, 10 (L, R) so that 0.42 V is obtained with Normal, then place the unit in CrO_2 mode, and make the above-mentioned fine adjustment only when the 0.42 V cannot be obtained.

MODIFICATION:

Ref. No.	Description	Part No.		Remarks
		Former	New	
R77, 78	Carbon Resistor	ERD14VJ152	ERD14VJ102	
R97, 98, 99, 100	"	—	ERD14VJ221	Added

CHANGEOVER:

From the production of November, 1974. (From serial number RK4...onward)

Schematic Diagram & Printed Board

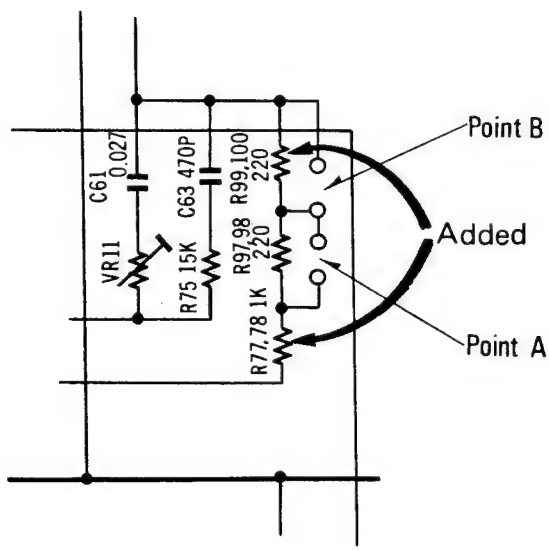


Fig. 1

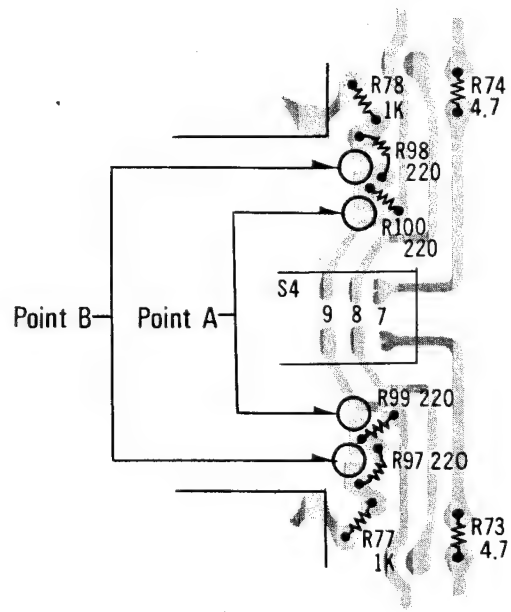


Fig. 2

How to Measure & Adjust Overall Gain for CrO_2

After "Overall Gain Adjustment" for Normal Tape adjust it for CrO_2 as follows.

1. Test equipment connection is shown in fig. 23 (Test tape: C-RF).
2. Place the unit into record mode.
3. Set the tape select switch to CrO_2 position.
4. Supply 1 kHz signal (−24 dB) from AF oscillator, through ATT to LINE IN.
5. Set the record level volume control to maximum.
6. Adjust ATT until monitor level at LINE OUT becomes 0.42 V (−7 dB).
7. Make recording mode.
8. Playback recorded tape, and make sure the value at LINE OUT on VTVM becomes 0.42 V (−7 dB) ± 1 dB.
9. Make short circuit as follow.

When Measured Value is — .	Close the Circuit Point — .
0.35 V ~ 0.37 V	A
0.3 V ~ 0.34 V	A and B

10. Repeat from step (2).

NOTE: In case that overall gain is out of standard during CrO_2 mode with the old type set, change the resistors as follows.

Old Type

When Measured Value is — .	Change the Resistors — .
Less than 0.37 V	R77, 78 to less than 1.5 KΩ
0.38 ~ 0.46 V	Not meed
More than 0.47 V	R77, 78 to more than 1.5 KΩ

REMARKS: Adding 220Ω cause a reduction by 0.5 dB.

G. Change of Audio Amplifier Circuit (2)

REASON:

CR constant of recording equalizer is changed for further improvement of high frequency range.

MODIFICATION:

Ref. No.	Description	Part No.		Remarks
		Former	New	
C57, 58	Mylar Capacitor	ECQM05563KZ	ECQM05393KZ	
C61, 62	"	ECQM05393KZ	ECQM05273KZ	
C63, 64	Styrol Capacitor	ECQM05103KZ	ECQS1471JZ	
C79, 80	Mylar Capacitor	ECQM05332KZ	ECQM05272KZ	
R75, 76	Carbon Resistor	ERD14VJ681	ERD14VJ153	

CHANGEOVER:

From the production of January, 1975. (From serial number RA5...onward)

H. Change of Audio Amplifier Circuit (3)

REASON:

① To eliminate click noise occurring at changeover operation of FM Dolby switch.
② Capacitance of playback frequency response adjusting capacitor is changed.
③ To prevent the oscillation in high frequency.

MODIFICATION:

Reason	Ref. No.	Description	Part No.		Remarks
			Former	New	
②	C1, 2	Styrol Capacitor	ECQS1561JZ	ECQS1681JZ	—
①	C17, 18	Tantalum Capacitor	ECEA16V10L	ECSZ16EF4R7	—
③	R79, 80	Carbon Resistor	—	ERD14VJ560	Added

CHANGEOVER:

From the production of December, 1974. (From serial number RL4...onward)

I. Change of Control Circuit

REASON:

① If voltage at record plunger drops, power of attraction reduces, resulting in failure of operation. To prevent such a trouble, resistance and capacitance are changed.
② In that result, because the current is increased, diode (D212) damage may be occured. In order to prevent diode damage, R250 is added.

MODIFICATION:

Ref. No.	Description	Part No.		Remarks
		Former	New	
R215	Carbon Resistor	ERD14VJ472	ERD14VJ222	—
R216	"	ERD14VJ121	ERD14VJ560	—
R233	"	ERD14VJ333	ERD14VJ153	—
R241	"	ERD14VJ822	ERD14VJ183	—
R250	"	—	ERD14VJ8R2	Added
R253	"	ERD14VJ682	ERD14VJ392	—
C201, 204, 415, 416, 423, 424	Aluminum Capacitor	ECAG25ER1	ECAG16ER1Y	—
C205	Electrolytic Capacitor	ECEA16V47L	ECEA16V100L	—

CHANGEOVER:

From the production of September, 1974. (From serial number RI4...onward)

J. Change of Dolby Circuit

REASON:

① Improvement of Dolby curve in high-frequency range characteristic.

② Countermeasure for deviation of Dolby adjustment occurring by vibration.

MODIFICATION:

Reason	Ref. No.	Description	Part No.		Remarks
			Former	New	
①	R437, 438	Carbon Resistor	ERD14VJ333	ERD14VJ393	—
①	C417, 418	Electrolytic Capacitor	ECEA6V47L	ECEA10V47L	—
①	C419, 420	Ceramic Capacitor	ECCD1H221K	ECCD1H220K	—
①	C437, 438	Mylar Capacitor	ECQM 05102KZB	—	Disused
①	VR401, 402	Semi-fixed Variable Resistor	QVSR19R473B	QVSR19R223B	—

NOTE: C419 and C420 are changed in position between base and collector of Tr409 (L-CH), Tr410 (R-CH).

CHANGEOVER:

From the production of September, 1974. (From seriel number RI4...onward)

K. Change of Power Transformer

REASON:

For improvement more performance and the countermeasure of safety.

MODIFICATION:

T3 QLPN3EMH ⟶ QLPN3EMHA

INTERCHANGEABILITY:

Former and new parts are interchangeable.

CHANGEOVER:

From the production of September, 1974. (From serial number RI4...onward)

L. Change of Leaf Switch

REASON:

In order to improve contact condition the contact pressure and material are changed.

Contact Pressure: 15 g ±5 ⟶ 20 g $^{+10}_{-5}$

MODIFICATION:

S103, 104 QSB0216 ⟶ QSB0216A

INTERCHANGEABILITY:

Old and new parts are interchangeable.

CHANGEOVER:

From the production of October, 1974. (From serial number RJ4...onward)

M. Change of Accessories & Packings

MODIFICATION:

Ref. No.	Description	Part No.		Remarks
		Old	New	
A3	Accessory Bag → Dust Cover	QFV0047	XZB16X22A05	—
P1	Inside Carton	QPN3082	QPN3180	—
P6	Spacer-2	QPA0116	—	Disused

CHANGEOVER:

From the production of September, 1974. (From serial number RI4...onward)

N. Change of Level Meter

REASON:

For improvement more performance and countermeasure of safety.

INTERCHANGEABILITY:

Old and new parts are interchangeability.

MODIFICATION:

E3 QSL1052RN ⟶ QSL1052RNAM

CHANGEOVER:

From the production of September, 1974. (From serial number RI4...onward)

O. Change of Bias Current

REASON:

Decrease of bias current causes overall frequency response to rise in the high-frequency range but worsens distortion factor. Therefore, the standard value of bias current is changed from 0.17 mA to 0.21 mA.

MODIFICATION:

Standard Value: 0.17±0.05 mA ⟶ Standard Value: 0.21±0.05 mA (on page 12)

0.12 mA ⟶ 0.16 mA (on page 17)

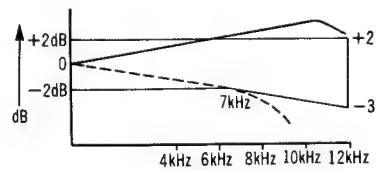
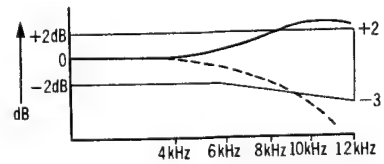
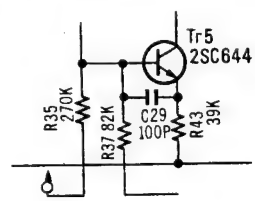
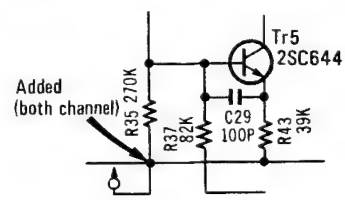
Correction of Measurement Method in Dolby NR

Bias leak, if occurring, is cut by the L.P.F. mounted in the front stage of Dolby NR circuit because of high-frequency. Practically, no problem arises relating to the measurement.

Stop the bias oscillation.....on page 19. (Error)

Need not to stop the bias oscillation (Correction)

SUBJECT: Corrections of RS-676US Service Manual

Page	Item	No.	Error	Correction
9	Head Azimuth	4	Measure both channels, ... by adjusting.	Measure both channels, and adjust levels for equal output.
16	Overall Frequency Response	5	0.42 V	0.042 V
16	Overall Frequency Response	—	 Fig. 28	 Fig. 28
18	Dolby FM	1	Test equipment connection is shown in fig. 22.	Test equipment connection is shown in fig. 22, but input jack should be TUNER IN, instead of LINE IN.
18	Dolby FM	6	... greater ...	... smaller ...
18	De-Emphasis	2	Place UNIT into record mode.	Release the record mode.
19	Note		Back side.	Bottom side.
22	Note	18	Close when cassette with knob out tub in.	Closed when cassette with knock out tab in.
22	Schematic Diagram	—		

De-Emphasis Characteristic on page 18 (Correct)

Make the correct measurement as follows.

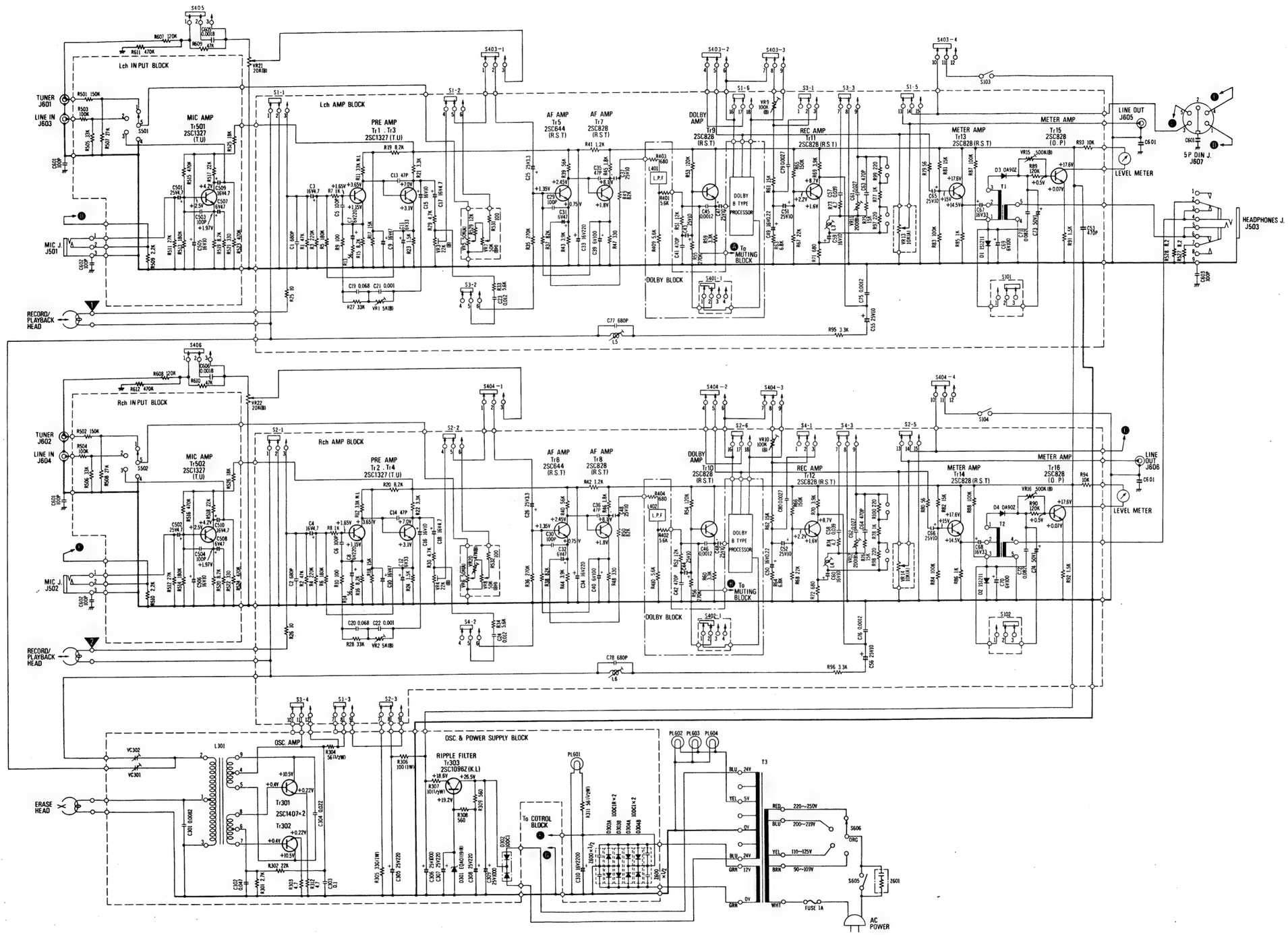
1. Test equipment connection is the same as above.
2. Release the record mode.
3. Set the Dolby FM switch to IN position and FM CAL VR, VR21 (L-CH), VR22 (R-CH) to maximum.
4. Set the de-emphasis switch to CONVENTIONAL position and Dolby NR switch to OUT position.
5. Supply 100 Hz signal to TUNER IN and adjust ATT so that output level at LINE OUT becomes 580 mV.
6. Change the frequency to 10 kHz and check the output level is about 580 mV.
7. Change the de-emphasis switch to 25μs position and confirm that the value at LINE OUT is 3 dB$\pm$1 greater than the value for 75μs position.

Parts List of Modifications and Corrections:

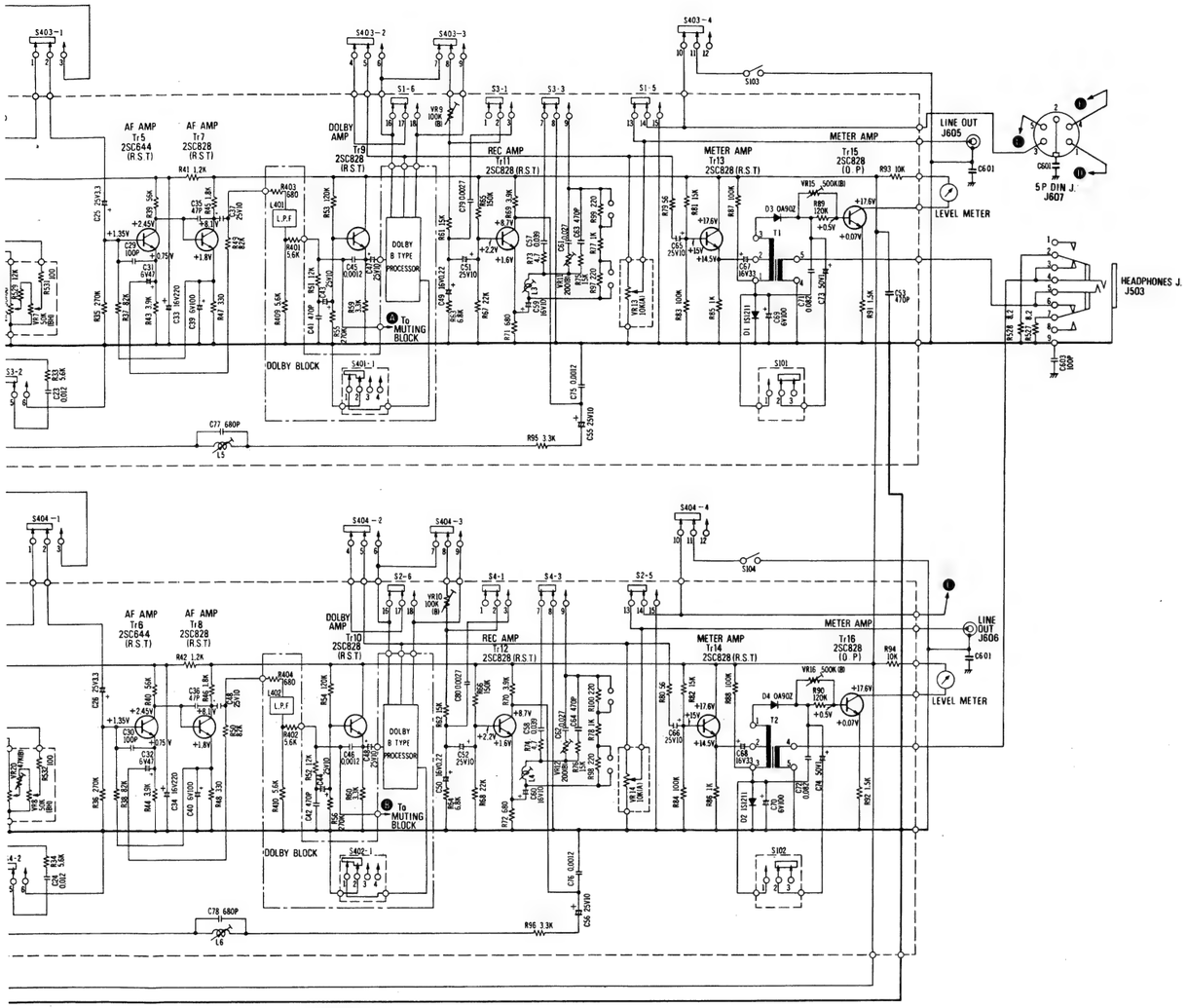
Ref. No.	Description	Old	New	Changeover (1974)	Remarks
M13	Tapping Screw	XTN3+8 (34 pcs.)	XTN3+8FX (36 pcs.)	November	
M18	Stop Ring	XUC25FT (6 pcs.)	XUC25FT (8 pcs.)	November	
M55	DC Motor (Capstan)	QDM1340D	QDM1340XPE	July	
M71	Takeup Reel Table Assembly	QXD0040	QXD0047A	September	
M76	Plunger Shaft	QMN1889B	QMN1889C	November	Pause Plunger
M76	Plunger Shaft	QMN1889B	QMN1817	November	Play Plunger
M77	Idler Lever Spring	QBT1440	QBT1409M	May	
M78	Nut	XNG3EFX (2 pcs.)	XNG3EFX (1 pcs.)	November	
M79	Spring Washer	XWA3BFX (2 pcs.)	XWA3BFX (1 pcs.)	November	
M83	Plunger	QME0141	QME0141A	November	
M90	Head Base Plate Assembly	QXK1479	QXK1479B	November	
M90A	Angle-B	—	QMA2661	November	Added
M125	DC Motor (FF & REW)	QDM1339C	QDM1335	September	
R75, 76	Carbon Resistor	ERD14VJ681	ERD14VJ153	January '75	
R77, 78	Carbon Resistor	ERD14VJ152	ERD14VJ102	November	
R79, 80	Carbon Resistor	—	ERD14VJ560	December	Added
R97, 98, 99, 100	Carbon Resistor	—	ERD14VJ221	November	Added
R215	Carbon Resistor	ERD14VJ472	ERD14VJ222	September	
R216	Carbon Resistor	ERD14VJ121	ERD14VJ560	September	
R233	Carbon Resistor	ERD14VJ333	ERD14VJ153	September	
R241	Carbon Resistor	ERD14VJ822	ERD14VJ183	September	
R250	Carbon Resistor	—	ERD14VJ8R2	September	Added
R253	Carbon Resistor	ERD14VJ682	ERD14VJ392	September	
R437, 438	Carbon Resistor	ERD14VJ333	ERD14VJ393	September	
R609, 610	Carbon Resistor	ERD14VJ433	ERD14VJ473	(Correction)	
VR401, 402	Semi-fixed Variable Resistor	QVSR19R473B	QVSR19R223B	September	
C1, 2	Styrol Capacitor	ECQS1561JZ	ECQS1681JZ	December	
C17, 18	Electrolytic Capacitor	ECEA16V10L	ECSZ16EF4R7	December	
C57, 58	Mylar Capacitor	ECQM05563KZ	ECQM05393KZ	January '75	
C61, 62	Mylar Capacitor	ECQM05393KZ	ECQM05273KZ	January '75	
C63, 64	Mylar → Styrol Capacitor	ECQM05103KZ	ECQS1471JZ	January '75	
C79, 80	Mylar Capacitor	ECQM05332KZ	ECQM05272KZ	January '75	

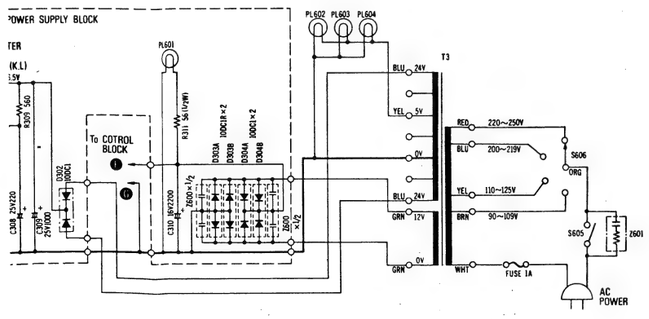
Ref. No.	Description	Old	New	Changeover (1974)	Remarks
C201,204,415 416,423,424	Aluminum Capacitor	ECAG25ER1	ECAG16ER1Y	September	
C205	Electrolytic Capacitor	ECEA16V47L	ECEA16V100L	September	
C417, 418	Electrolytic Capacitor	ECEA6V47L	ECEA10V47L	September	
C419, 420	Ceramic Capacitor	ECCD1H221K	ECCD1H220K	September	
C437, 438	Mylar Capacitor	ECQM05102KZ	—	September	Disused
T3	Power Transformer	QLPN3EMH	QLPN3EMHA	September	
S103, 104	Leaf Switch	QSB0216	QSB0216A	October	
S605	Push Switch	ESB1134SU	ESB1134S23	(Correction)	
E3	Level Meter	QSL1052RN	QSL1052RNAM	September	
G4	Jack Base Plate	QMK1485	QMK1486C	(Correction)	
G19	Pause Button Assembly	QXB0233 (1 pcs.)	QXB0233 (2 pcs.)	(Correction)	
G31	Washer 3ϕ	XWE3	XWG3	(Correction)	
A1	Cassette Music Tape	QFT6TCJNTBPZ	QFT6TCJNTBFZ	(Correction)	
A3	Dust Cover	QFV0047	XZB16X22A05	September	
P1	Inside Carton	QPN3082	QPN3180	September	
P6	Spacer-2	QPA0116	—	September	Disused

SCHEMATIC DIAGRAM MODEL RS-676US



L RS-676US

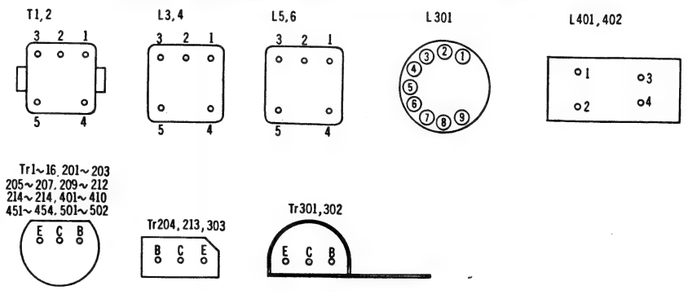




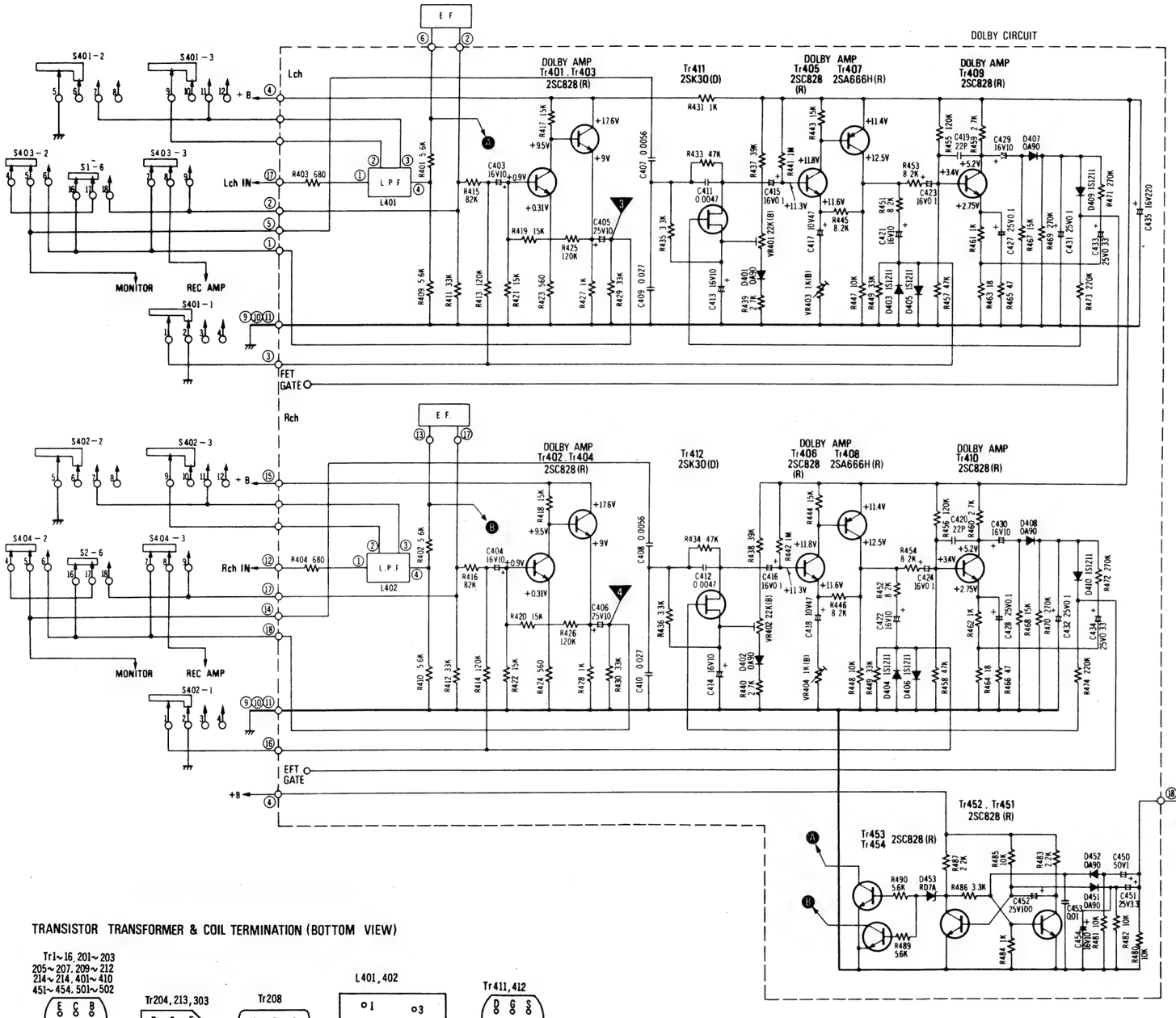
NOTE:

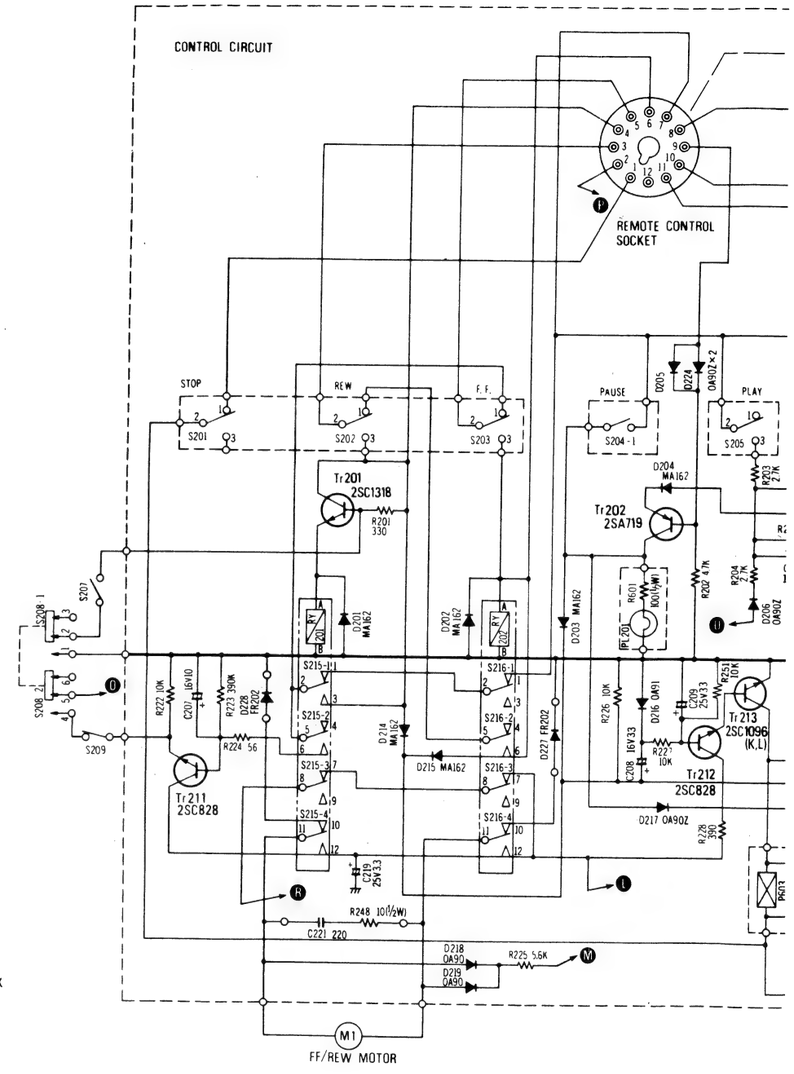
1. S1-1～S1-6, S2-1～S2-6 ..... Record/playback select switch (shown in playback position).
2. S3-1～S3-3, S4-1～S4-3 ..... Tape select switch (shown in normal position).
3. S101, S102 ..... Peak check switch (shown in OFF position).
4. S103, S104 ..... Muting switch.
5. S401-1～S401-3, S402-1～S402-3... Dolby NR switch.
   1...NR: OUT, MPX filter: OUT, 2...NR: IN, MPX filter: IN,
   3...NR: IN, MPX filter: OUT.
6. S403-1～S403-4, S404-1～S404-4... Dolby FM switch (shown in OUT position).
7. S405, S406 ..... Dolby FM DE-EMPHASIS switch.
8. S501, S502 ..... Input select switch (shown in tuner position).
9. S605 ..... Power ON/OFF switch.
10. S606 ..... AC power voltage selector.
11. VR1, 2 ..... Playback equalizer adjustment VR.
12. VR3, 4 ..... Playback gain adjustment VR.
13. VR5, 6 ..... Record level control.
14. VR7, 8 ..... Balance control.
15. VR9, 10 ..... Record level adjustment VR.
16. VR11, 12 ..... Record equalizer adjustment VR for CrO_2.
17. VR13, 14 ..... Playback level control.
18. VR15, 16 ..... Level meter adjustment VR.
19. VR20 ..... Balance adjustment VR.
20. VR21, 22 ..... Dolby FM CAL VR.
21. PL601 ..... Auto stop operator lamp.
22. PL602 ..... Pilot lamp for cassette cabin.
23. PL603, 604 ..... Meter light (L, R).
24. Resistor values are in ohms (Ω), 1/4 watt unless specified otherwise.
    K=1,000Ω.
25. Capacitor values are in microfarads (μF) unless specified otherwise.
    P=pico-farads.
26. The mark (▼) shows test point. e.g. ▼=Test point 1.
27. All measurements are under no signal conditions with volume at minimum position.
    Use VTVM for voltage measurements.
28. Abbreviation of color indications for power transformer termination.
    BLK...Black, BLU...Blue, BRN...Brown, GRY...Gray, ORG...Orange, RED...Red,
    WHT...White, YEL...Yellow.

TRANSISTOR TRANSFORMER & COIL TERMINATION (BOTTOM VIEW)



SCHEMATIC DIAGRAM MODEL RS-676US

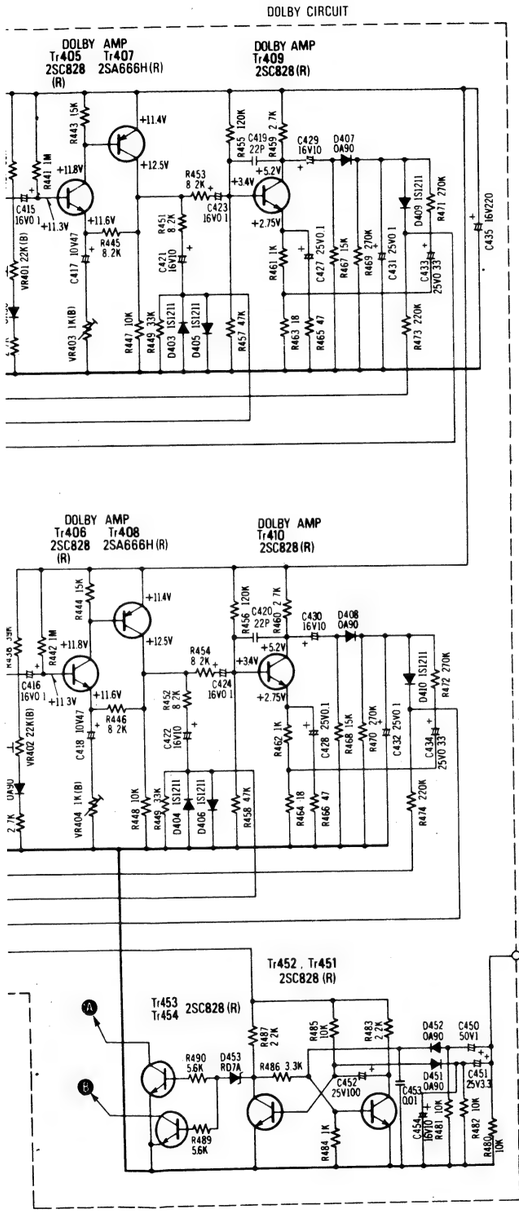


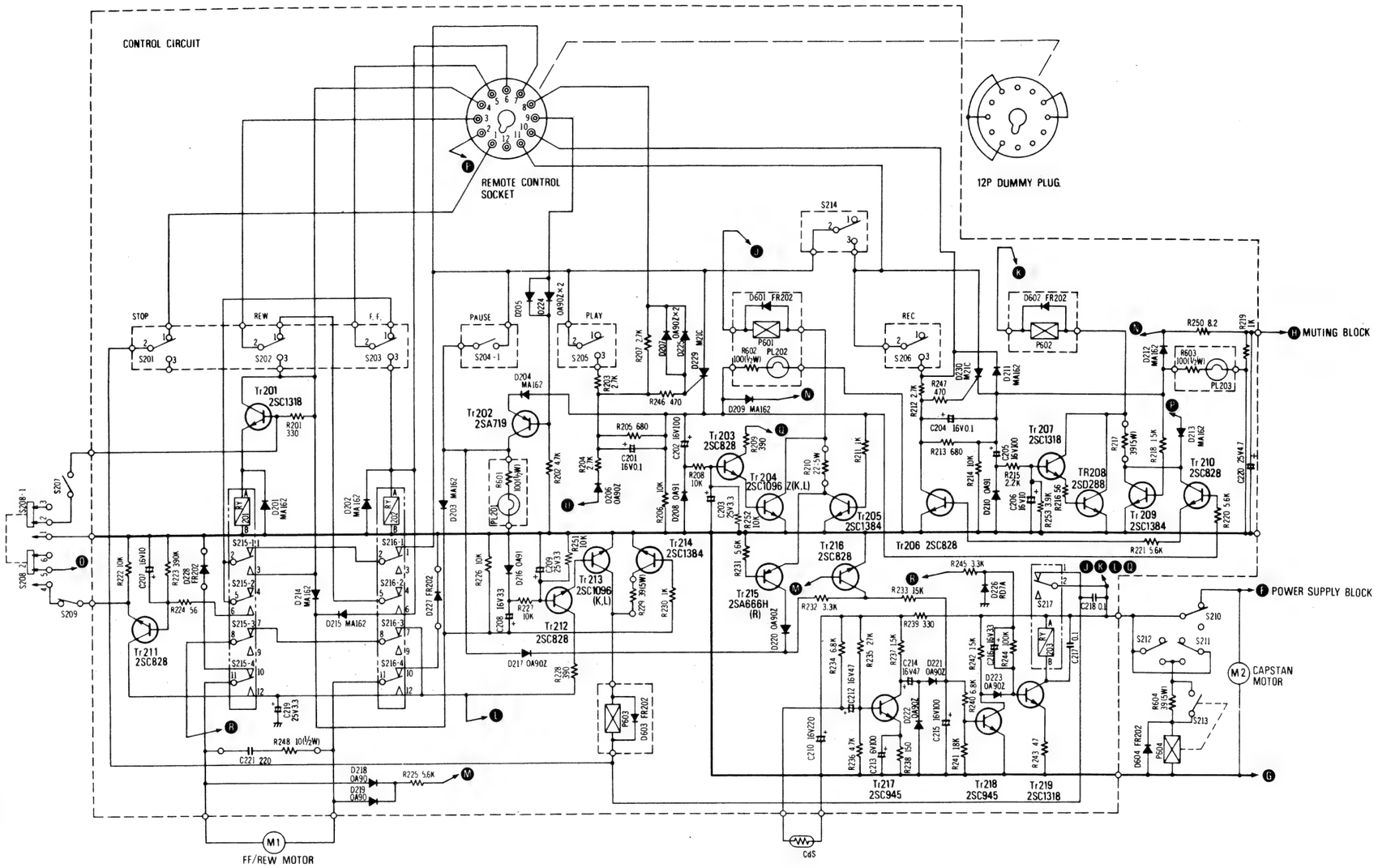


TRANSISTOR TRANSFORMER & COIL TERMINATION (BOTTOM VIEW)

NOTE:

1. S1-1~S1-6, S2-1~S2-6 ..... Record/playback select switch (shown in playback position).
2. S201 ..... Stop switch.
3. S202 ..... Rewind switch.
4. S203 ..... Fast forward switch.
5. S204 ..... Pause switch.
6. S205 ..... Play switch.
7. S206 ..... Record switch.
8. S207 ..... Memory tape counter switch.
9. S208 ..... Memory & play switch.
10. S209 ..... Memory & play switch.
11. S210 ..... Power switch (close when cassette in).
12. S211 ..... Tape select switch.
13. S212 ..... Automatic tape select switch.
14. S213 ..... Current save switch.
15. S214 ..... Record detecting switch (closed when cassette with knock out tab
16. S215 ..... Rewind relay switch.
17. S216 ..... Fast forward relay switch.



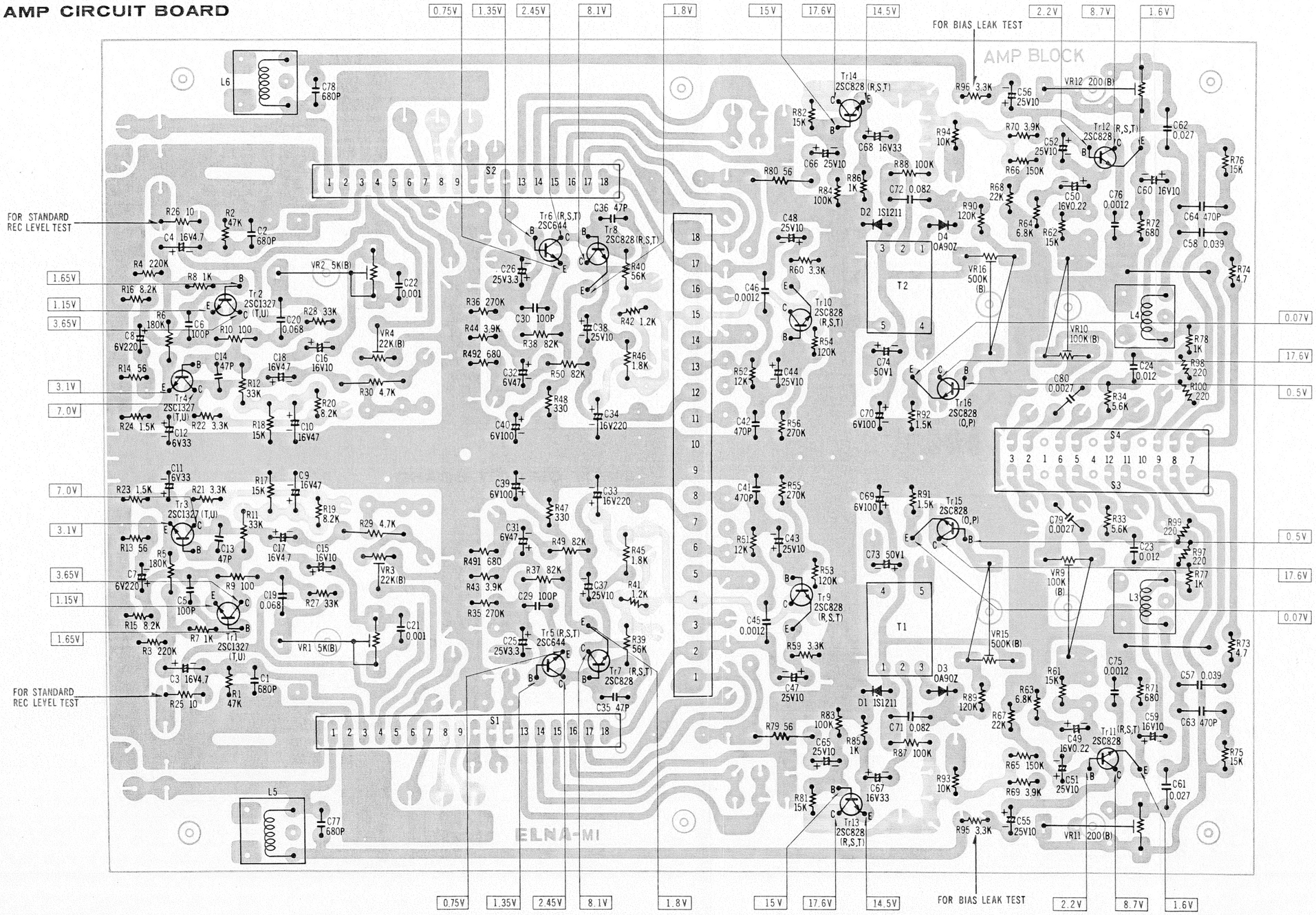


NOTE:

1. S1-1～S1-6, S2-1～S2-6 ..... Record/playback select switch (shown in playback position).
2. S201 ..... Stop switch.
3. S202 ..... Rewind switch.
4. S203 ..... Fast forward switch.
5. S204 ..... Pause switch.
6. S205 ..... Play switch.
7. S206 ..... Record switch.
8. S207 ..... Memory tape counter switch.
9. S208 ..... Memory & play switch.
10. S209 ..... Memory & play switch.
11. S210 ..... Power switch (close when cassette in).
12. S211 ..... Tape select switch.
13. S212 ..... Automatic tape select switch.
14. S213 ..... Current save switch.
15. S214 ..... Record detecting switch (closed when cassette with knock out tab in).
16. S215 ..... Rewind relay switch.
17. S216 ..... Fast forward relay switch.
18. S217 ..... Auto stop relay switch.
19. S401-1～S401-3, S402-1～S402-3... Dolby NR switch.
    1...NR: OUT, MPX filter: OUT, 2...NR: IN, MPX filter: IN,
    3...NR: IN, MPX filter: OUT.
20. S403-1～S403-4, S404-1～S404-4... Dolby FM switch (shown in OUT position).
21. S405, S406 ..... Dolby FM DE-EMPHASIS switch.
22. VR401～404 ..... Dolby adjustment VR.
23. PL201 ..... Pause indicator lamp.
24. PL202 ..... Play indicator lamp.
25. PL203 ..... Record indicator lamp.
26. P601 ..... Play plunger.
27. P602 ..... Record plunger.
28. P603 ..... Pause plunger.
29. P604 ..... Tape select plunger.

CIRCUIT BOARD

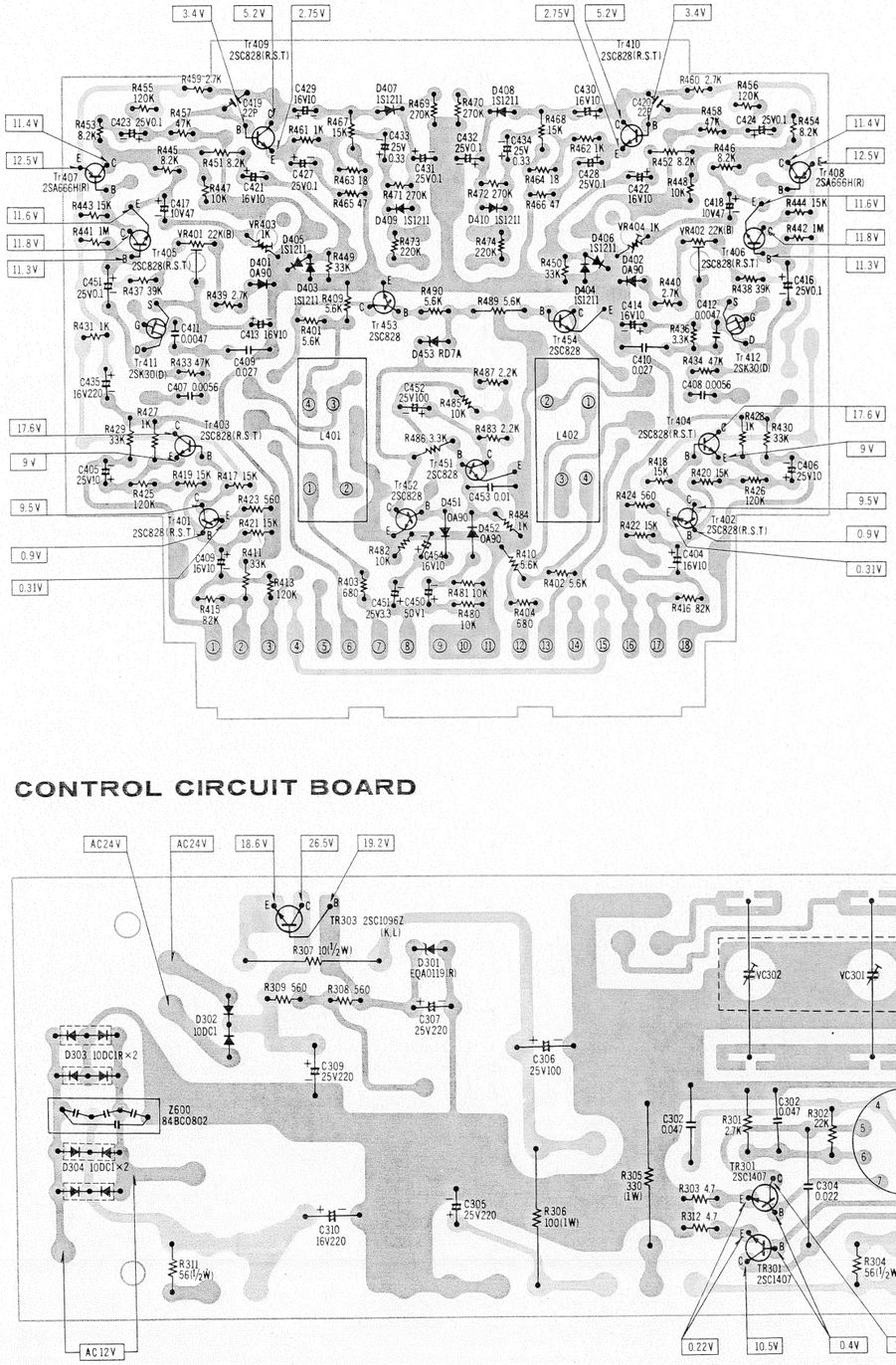
AMP CIRCUIT BOARD



NOTE:

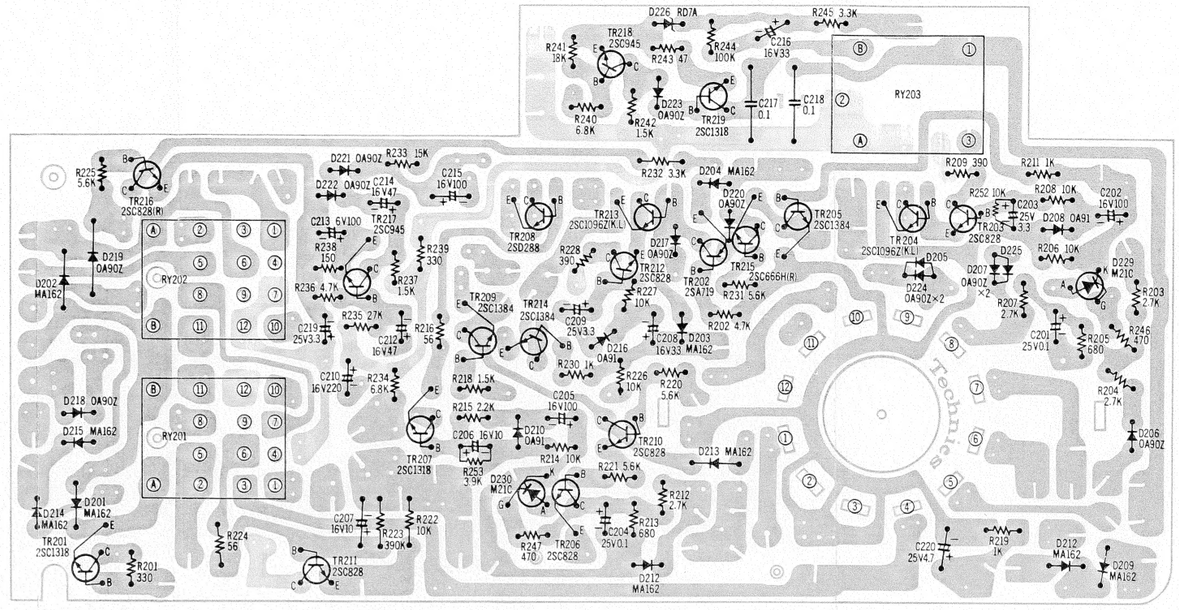
The circuit shown in green on the conductor side is +B circuit.
Values indicated in ▭ are DC voltages between the chassis and electrical parts.

DOLBY CIRCUIT BOARD

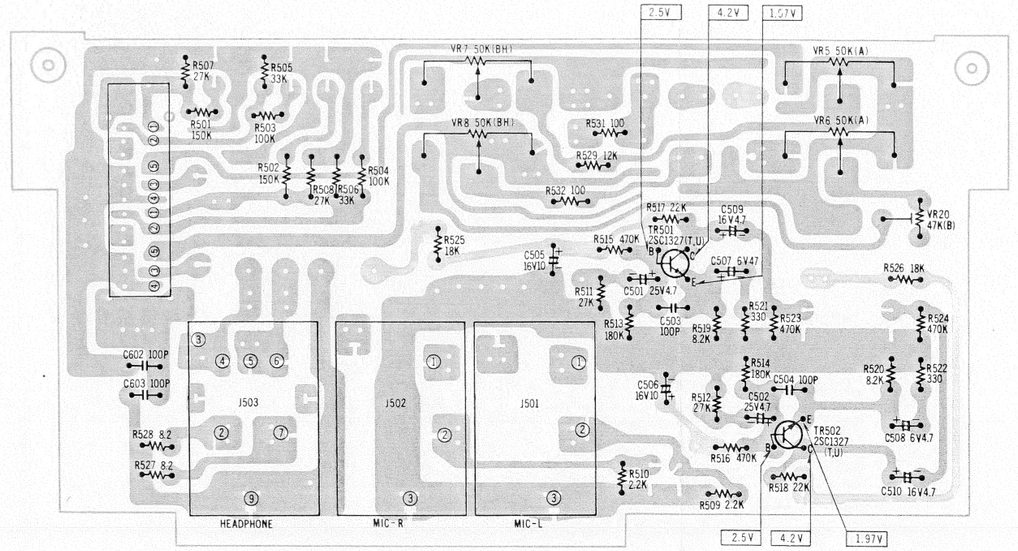


CONTROL CIRCUIT BOARD

POWER CIRCUIT BOARD



INPUT CIRCUIT BOARD



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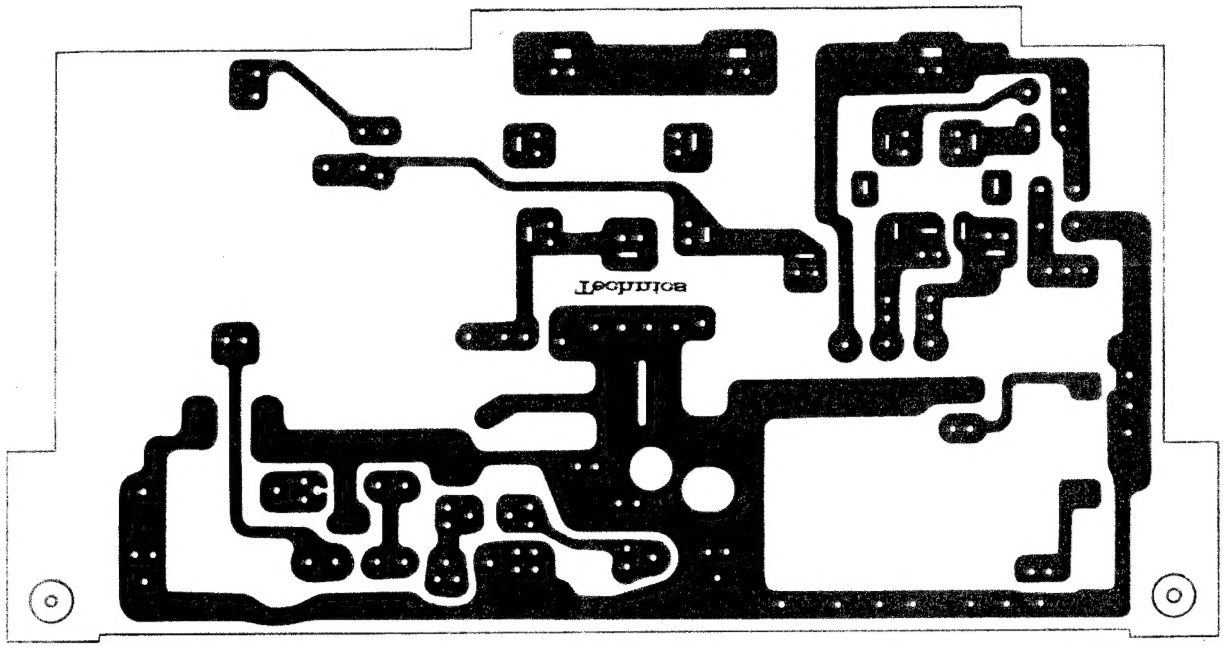

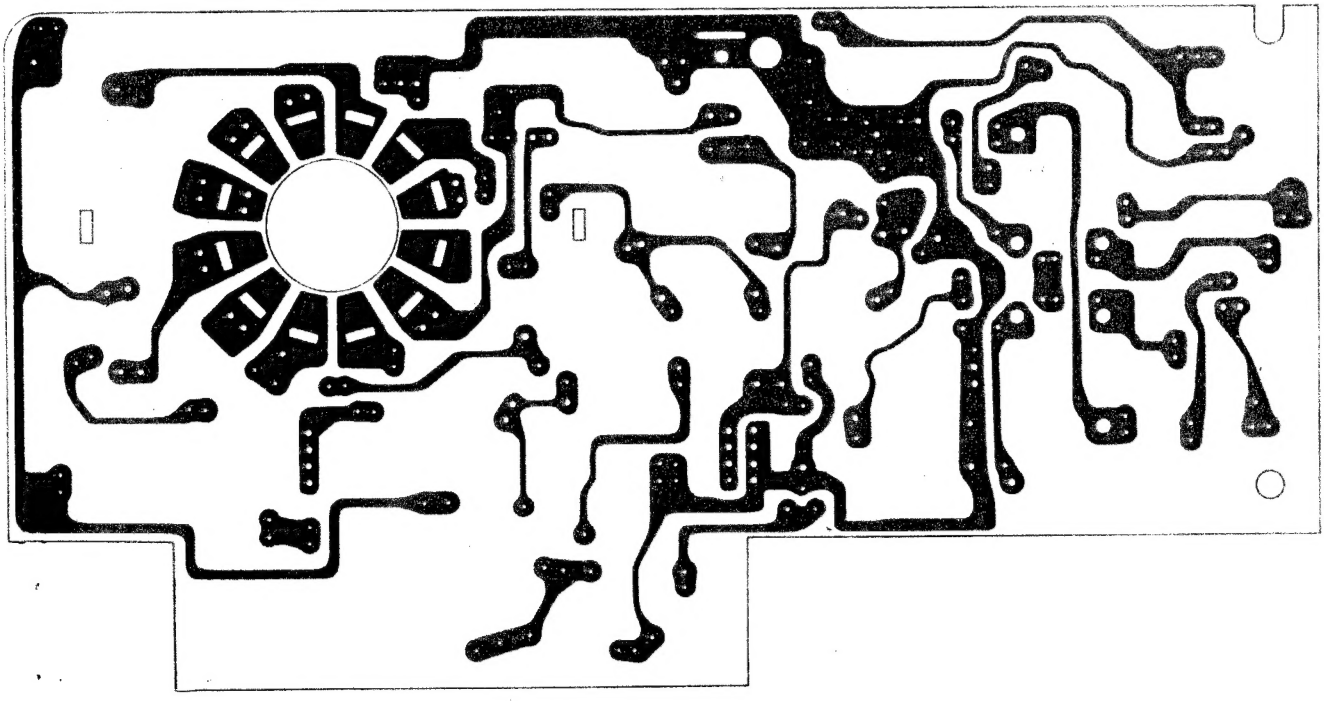

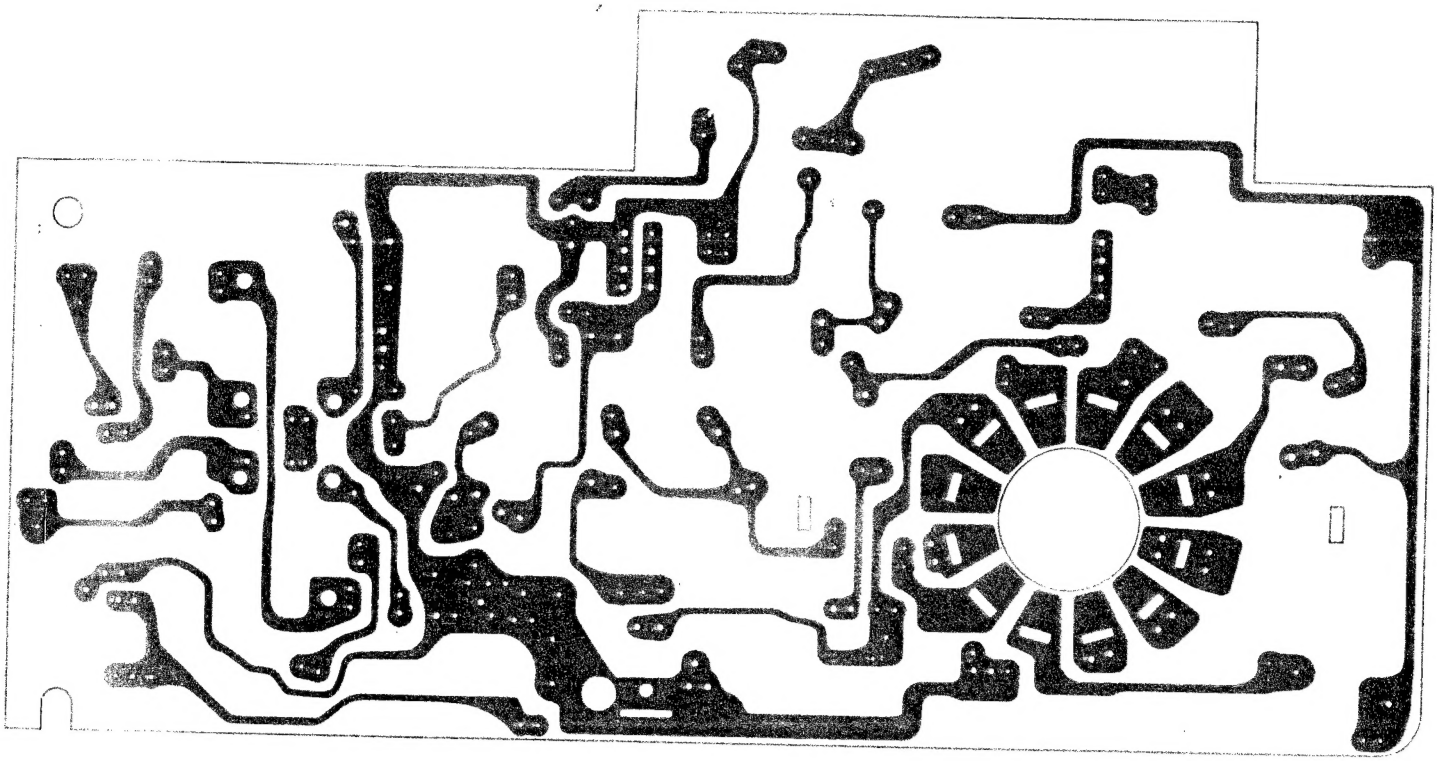

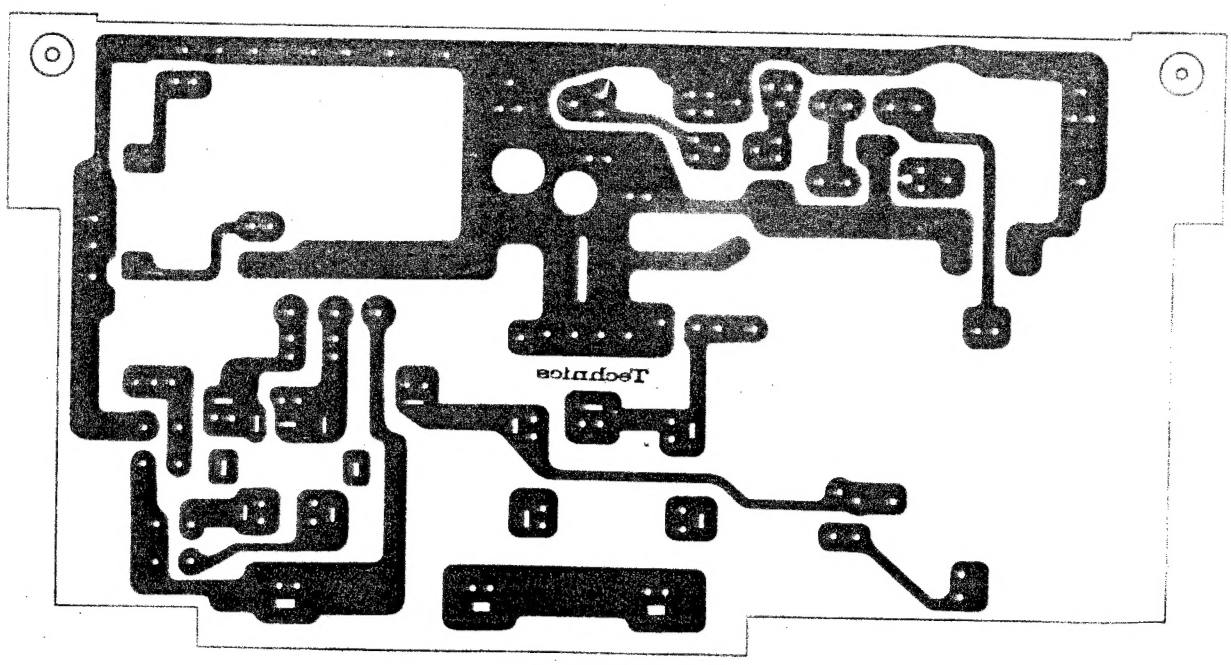
Techpulse